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*List of Trees and Shrubs mentioned in the Report and
their Scientific names.*

• English and Vernacular name.			Scientific name.
Anjan	..	..	<i>Hardwickia binata.</i>
Babul	..	..	<i>Acacia arabica.</i>
Bamboo	..	..	<i>Dendrocalamus strictus.</i>
Casuarina	..	..	<i>Casuarina equisetifolia.</i>
Cypress	..	..	<i>Cupressus torulosa.</i>
Dhavda	..	..	<i>Anogeissus latifolia.</i>
Heddi	..	..	<i>Adina cordifolia.</i>
Hirda	..	..	<i>Terminalia Chebula.</i>
Honne, Bibla	..	..	<i>Pterocarpus marsumpium.</i>
Jamba	..	..	<i>Xylia xylocarpa.</i>
Jambul	..	..	<i>Eugenia jambolana.</i>
Kajra	..	..	<i>Strychnos nux-vomica.</i>
Kakad	..	..	<i>Garuga pinnata.</i>
Karwand	..	..	<i>Carissa carandas.</i>
Kashid	..	..	<i>Cassia siamea.</i>
Khair	..	..	<i>Acacia catechu.</i>
Kindal	..	..	<i>Terminalia paniculata.</i>
Lantana	..	..	<i>Lantana camara.</i>
Matti, Ain	..	..	<i>Terminalia tomentosa.</i>
Mhowra	..	..	<i>Bassia latifolia.</i>
Nana	..	..	<i>Lagerstræmia microcarpa.</i>
Nimb	..	..	<i>Melia azadirachta.</i>
Sandal	..	..	<i>Santalum album.</i>
Sissum	..	..	<i>Dalbergia latifolia.</i>
Shemat	..	..	<i>Odina wodier.</i>
Shivan, Shivni	..	..	<i>Gmelina arborea.</i>
Sirsul	..	..	<i>Albizzia lebbek.</i>
Tali	..	..	<i>Dalbergia sissoo.</i>
Teak	..	..	<i>Tectona grandis.</i>
Tiwas, Karimuttal	..	..	<i>Ougeinia dalbergioides.</i>
Timbru, Tumri, Temburni	..	..	<i>Diospyros melanoxylon.</i>
Tugli	..	..	<i>Albizzia amara.</i>
Tung tree	..	..	<i>Aleurites fordii.</i>

FOREST ADMINISTRATION REPORT OF THE BOMBAY PRESIDENCY FOR THE YEAR 1936-37.

CHAPTER I.

CONSTITUTION OF STATE FORESTS.

1. ALTERATIONS IN AREA—(FORM NO. 51, PARTS I AND II).

The changes in forest area were as follows :—

Class of Forest.		Area on 1st April 1936.	Added during the year.	Excluded during the year.	Area on 31st March 1937.
		Sq. miles.	Sq. miles.	Sq. miles.	Sq. miles.
Reserved ..	{ In charge of Forest Depart- ment ..	10,574	6	1	10,579
	{ In charge of Revenue De- partment ..	1,644	....	5	1,639
Protected ..	{ In charge of Forest Depart- ment ..	162	....	....	162
	{ In charge of Revenue De- partment ..	619	....	1	618
Total ..		12,999	6	7	12,998

The areas added and excluded comprise :—

	Square miles.	
	Gain.	Loss.
(1) Afforestations, and disforestsments in favour of cultivation	5	6
(2) Transfer from the management of Revenue Department to that of Forest Department	1	1
	<u>6</u>	<u>7</u>

Net loss=1 square mile.

Out of the total exclusion of 7 square miles mainly in favour of cultivation, the Central Circle contributed about 4 square miles chiefly in the Poona, Ahmednagar and Satara districts and the balance was shared by the Northern and Southern Circles. An area of 4 square miles in the Belgaum Division of the Southern Circle containing profuse growth of sandalwood was afforested.

2. FOREST SETTLEMENTS.

A glance at Form No. 52 for each Circle will show the operations under this head during the year. The total area pending settlement at the commencement of the year was 5 square miles and 192 acres and the area taken in hand during the year was 271 acres. The area that has been finally settled at the close of the year was 5 square miles and 75 acres. No expenditure was incurred on this account.

The area of 1,713 acres pertaining to the Sardar Biwalkar's Inam Forests has been ordered to be restored to the Sardar as directed by Government ; hence it is excluded from the form.

3. DEMARCATION.

74 Miles of new boundaries were artificially demarcated at a cost of Rs. 574 and 23,270 miles of existing boundaries were repaired at a cost of Rs. 3,854. The total length of boundaries at the close of the year was 38,093 miles.

The frontier lines between Goa and British territory (22 miles), and Mysore and British territory (27 miles) in the Southern Circle, and Bhore State and British territory (11 miles) in the Central Circle were repaired.

The settlement of the boundary between Baroda State and British territory arrived at last year could not be given effect to during the year under report, as alternative proposals are still under consideration.

4. FOREST SURVEYS.

No survey work was undertaken. The work of checking the boundaries of forests in the Mandvi Sub-Division was however completed during the year.

The expenditure on the constitution of State forests was :—

				1935-36.	1936-37.
				Rs.	Rs.
Northern Circle	..	..	..	152	49
Central Circle	..	..	..	291	15
Southern Circle	..	..	..	115	510

CHAPTER II.

MANAGEMENT OF STATE FORESTS.

1. REGULATION OF MANAGEMENT.

(a) Preparation and control of Regular Working Plans.

*Preparation—(Form No. 55).—*The following working plans were finally sanctioned by Government :—

- (1) The revised working plan for the Nasik Above-Ghat Forests.
- (2) Working plan for the Satmalla forest in the East Khandesh Division.
- (3) The revised working plan for all Coastal Casuarina plantations.
- (4) Working plan for Castle Rock Fuel Supply.
- (5) Revised working plan for Yellapur-Mundgod Teak High Forests.

The following working plans were undertaken during the year :—

- (1) A revised working plan for all the forests included in the existing working plans in West Khandesh and the unorganised scrub areas in the Sakri, Pimpalner and Dhulia Ranges of the same Division.
- (2) One consolidated working plan to replace all the working plans for teak pole and scrub forests of the Dharwar-Bijapur Division which are under revision.

The drawing up of the working plan for the Thana Gurcharans was in progress. The silvicultural sections in the Kolaba working plan referred to in the last year's report were rewritten and brought up to date. The revision of the Gund working plan and the Kalinadi slopes working plan continued from last year was still in progress. Besides these, data were collected for the revision of the plan for the Mundgod Teak Pole area and enumeration surveys were carried out in connection with the working plan for the sandalwood working circle of the Khanapur, Nagargali, and the Gujnal Ranges of the Belgaum Division. The Divisional Forest Officer, North Khandesh, inspected the unorganised forests along the Dara-Dhadgaon road with a view to bringing them under a regular working plan.

The revision of the working plan for the Tulshi forests is held up pending decision by the Bombay Corporation of the question of inclusion in it of the municipal forests in the Vihar catchment area.

The Working Plans Office in the Northern Circle was revived in November 1936 and the Divisional Forest Officer in charge has been entrusted with the revision of the following working plans :—

- (1) Working plan for Peint and the adjoining forests.
- (2) Working plan for the Igatpuri forests.
- (3) Working plan for the Panch Mahals forests.

(b) *Control of working plans.*

Prescriptions of the working plans in force were adhered to as far as possible in all Circles. Several coupes remained unsold for such causes as lack of demand, poor quality of tree-growth, inaccessibility or long lead, etc.

The old system of "coppice with standards" was substituted for the "cautious thinnings or improvement fellings" suggested for the protection working circle of the Poona Working Plan, with a view to maintaining an adequate and permanent canopy to prevent erosion in these catchment areas. The number of standards to be kept was raised to 40 per acre.

2. COMMUNICATIONS AND BUILDINGS.

(a) *Roads and bridges.*

Over 10 miles of new roads were constructed in all Circles at a cost of Rs. 17,087 and repairs to about 1,050 miles of existing roads costing Rs. 78,646 were completed during the year. The latter amount, however, includes Rs. 37,983 paid to the M. & S. M. Railway Company as charges for maintenance of the Alnavar-Dandeli Railway. The corresponding figures of expenditure on new roads and repairs to old ones for the last year were Rs. 17,557 and Rs. 88,611 respectively.

A further $3\frac{1}{2}$ miles of the Dara-Dhadgaon road in the Central Circle were constructed during the year. In the Southern Circle the following new works were either completed or in progress :—

- (1) The causeway over the Mastinala in the Kanara E.D. completed.
- (2) Construction of about $3\frac{1}{2}$ miles of Manglankop-Amatgar-Kurli road completed.
- (3) Replacement of culvert No. 84 on the Kadra-Shivpur road in progress.

The following roads in the Northern Circle, though sanctioned by Government, both administratively and technically, could not be undertaken for want of funds :—

- (1) Ozar-Saiwan road.
- (2) Tembha-Parali road.
- (3) Washala-Dolkhamb road.

The estimates, amounting to Rs. 41,277 for carrying out essential repairs to the Hatgad-Vani road have been administratively approved by Government.

(b) *Buildings.*

The total expenditure on the construction of new buildings in all the circles amounted to Rs. 28,233 as against Rs. 29,625 in the previous year and that on repairs was Rs. 19,584 against Rs. 22,483 in the preceding year.

The usual complaint about the inadequacy of housing accommodation or forest subordinates continues. Progress in this very desirable direction is slow for want of funds.

(c) *Miscellaneous (other works).*

Rs. 970 were spent on new works and Rs. 3,423 on repairs to existing wells and compounds, telephone rent, etc., against Rs. 708 and Rs. 3,058 in the last year.

Besides the above expenditure Rs. 60 were paid to a Water Finder Expert for his services in selecting sites for Arbail and Yellapur wells.

3. PROTECTION OF FORESTS.

The following statement compares the number of forest offences of the year with those of 1935-36 and the average of the last three years :—

Class of offence.	1936-37.				1935-36.	Average of 1933-34 to 1935-36.
	Northern Circle.	Central Circle.	Southern Circle.	Total.		
I. Injury to forest by fire ..	664	490	303	1,457	1,732	1,702
II. Unauthorised felling or removal of forest produce ..	5,030	5,775	1,574	12,388	11,767	10,843
III. Unauthorised grazing ..	2,578	2,038	448	5,664	4,938	4,849
IV. Other offences ..	1,140	1,200	274	2,720	2,810	2,659
Total, 1936-37 ..	9,421	10,109	2,699	22,229	....	....
Total, 1935-36 ..	10,052	8,240	3,005	..	21,297	....
Average of 1933-34 to 1935-36 ..	9,163	8,051	2,898	..	....	20,052

The total number of offences in the above table shows an increase of 932 offences over those of the last year and the Central Circle alone is responsible for it. Offences under Classes I and IV show a decrease of 275 and 90 respectively while those under Classes II and III have increased by 621 and 676.

Injury by fire.—The Northern, Central and Southern circles record a decrease of 46, 141 and 88 respectively in the aggregate number of fire offences as compared with those of the previous year. Causes of forest fires have been discussed under “Protection from fire”.

Unauthorised fellings.—As compared with the number of offences under this class in the last year, the Northern and Southern circles show a decrease of 492 and 16 offences respectively while in the Central Circle there is an increase of 1,129 offences. The decrease in the Northern Circle occurs chiefly in the West Nasik Division, which recorded a decrease

of 665 cases, as also to a smaller extent in the Panch Mahals, North Thana and West Thana divisions. This decrease is partly counterbalanced by an increase of 149 and 101 cases respectively in the East Thana and East Nasik divisions. The decrease in West Nasik is, it is believed, due to a number of offences remaining undetected. The subordinates, it is reported, have been ordered to be more vigilant. The increase in East Thana and East Nasik divisions is attributed to greater vigilance on the part of the Subordinates.

The increase in the Central Circle is mainly due to the following reasons :—

- (1) illicit stripping off of *anjan* leaves in the Khandesh Divisions ;
- (2) illicit cutting of fuel for sale roundabout big towns like Jalgaon ;
- (3) greater vigilance shown by the subordinates in West Khandesh, Poona and Kolaba divisions ;
- (4) scarcity conditions prevailing in the greater part of the Circle.

In the Kolaba Division much difficulty is experienced in checking the tendency of the people to resort to unauthorised fellings in the forests bordering “*kharpati*” owing to the existence of several large populous villages having no forests of their own. The assault case referred to in the last year’s report was decided and both the accused were sentenced to six months’ rigorous imprisonment in addition to fine. Two similar cases occurred this year—one in the Kolaba Division in which the offenders were ordered to furnish securities for good behaviour and the other in the Southern Circle which has not yet been finally decided.

The four depôts opened in the Kolaba Division for supplying wood to the agriculturists for agricultural implements and fuel as a preventive measure against illicit cutting were continued but at two depôts only was there anything like a good demand for the material and, it is regretted, few agriculturists availed themselves of this facility.

Unauthorised felling offences in the Southern Circle showed a decrease of 16 as compared with the total of the previous year. There was a substantial decrease of 106 cases in the three Kanara Divisions and the Belgaum Division, but this was partly counterbalanced by an increase of 90 cases in the Dharwar-Bijapur Division. The decrease in the three Kanara Divisions and the Belgaum Division was largely due to an appreciable improvement in the economic conditions and a better appreciation of the privilege rules. The increase in the Dharwar-Bijapur division occurred chiefly in the Bijapur District and was due to famine conditions.

Unauthorised grazing.—There was on the whole a small increase of 26 offences under this head in the Northern Circle as compared with those of the last year. This increase which is shared by most of the divisions is too small to need any comment.

As compared with the last year the number of offences under this head in the Central Circle increased by 783 and all the divisions except Kolaba contributed to the increase. The number in the West Khandesh and Poona divisions was nearly double that of the previous year and the

reasons for this abnormal increase are reported to be scarcity of fodder and greater vigilance shown by the subordinates. The offences committed in the areas in charge of contractors which were hitherto treated as breaches of contract terms, were taken in the Poona Division on the regular offence register in cases where the contractors could not personally be held responsible.

The decrease of 133 in the total number of offences in the Southern Circle was shared by all the divisions and was largely due to the policy of taking cognizance of offences of only deliberate trespass and of driving out cattle straying beyond the border line into closed forests.

Other offences.—The Northern and Southern circles record a decrease of 119 and 69 cases respectively while the Central Circle shows an increase of 98 cases. Kanara N. D. however showed an increase of 31 cases which were chiefly due to the encroachment by shop-keepers, contractors and others on the Dandeli Depot area. Most of the offences under this head relate to breaches of transit rules and little or no explanation can be given for the variations.

Four hundred and sixteen new cases were taken to court during the year. 294 cases (including 168 pending from the last year) were decided and 272 of these ended in conviction of the offenders. Out of 17,493 cases compounded, compensation amounting to Rs. 75,533 was recovered in 16,661 cases or an average of Rs. 4.5 per case as against Rs. 4.7 in the last year. In 832 cases the offenders were let off and 3,132 cases remained undetected.

(b) *Protection from fire.*

The figures in the subjoined statement compare the results of two fire seasons, 1st June 1935 to 31st May 1936, and 1st June 1936 to 31st May 1937. These figures do not tally with those in Form No. 58 which are for the financial year ending 31st March 1937 :—

Circle.	Fire season of	Area attempted to be protected.	Failures.	Area actually protected.	Percentage of area actually protected.	Cost.	Cost per square mile protected.
		Sq. miles.	Sq. miles.	Sq. miles.	Sq. miles.	Rs.	Rs.
Northern	1936-37	2,605	60	2,545	97.7	5,303	2.1
	1935-36	2,605	101	2,504	96	6,712	2.7
Central	1936-37	3,918	144	3,774	96.3	9,030	2.4
	1935-36	3,918	356	3,562	91	8,127	2.3
Southern	1936-37	966	27	939	97	8,223	8.8
	1935-36	984	30	954	97	7,731	8.1
Total	1936-37	7,489	231	7,258	96.9	22,565	3.1
	1935-36	7,507	487	7,020	94	22,370	3.2

There was an appreciable decrease in the area burnt in the Northern Circle; the Panch Mahals, North Thana and West Thana divisions contributing thereto. The decrease in the Panch Mahals was due to the fact that the villagers took special care to protect the forest, as fire would have deprived them of the only source of grazing for their cattle during the scarcity of fodder that prevailed there.

Some of the fires in Thana were started by the villagers to facilitate illicit shikar. Persons holding crop protection gun licenses are believed to be the chief offenders. These people go out for shooting on such occasions as Holi holidays. The Divisional Forest Officer, West Thana, recommends, and the Conservator of Forests, Northern Circle, supports him, that these licenses should be withdrawn from 15th January to 15th May as there are no standing crops during that period and there will not be any hardship caused if the license-holders deposit their guns during this time in the taluka office.

The decrease in the Central Circle is due to the following reasons :—

- (1) burning of more fire lines on both sides of forest roads in the Satpudas and cart-tracks in the coupes ;
- (2) removal of abnormal quantities of grass from the Satpudas on account of famine ;
- (3) enforcement of communal punishment ;
- (4) owing to partial failure of the monsoon the growth of grass was poor and it minimised the risk from fire.

Rewards were paid in cash in the East Khandesh Division and turbans worth Rs. 150 were given in Mandvi Taluka to the Patils and Kamgars for good fire protection. For the same reason grazing fees were remitted in 11 villages in the West Khandesh Division and reduced to half the normal rate in one village of the Mandvi Range.

The decrease of 3 square miles in the Southern Circle is accounted for by the favourable climatic conditions. 25 villages were rewarded with the concession of free-grazing for good protection and in 9 villages in Kanara E. D. grazing fees were reduced.

(c) *Protection from cattle* (Forms Nos. 60 and 61).

The forest areas open and closed to grazing were as follows :—

	Sq. miles.	Per cent.
Closed to all animals for the whole year	1,272	9·7
Closed to all animals for part of the year	362	2·7
Open to all animals except browsers for the whole year ..	8,645	66·5
Open to all animals except browsers for part of the year	17	·1
Open to all animals for the whole year	2,674	20·8
Open to all animals for part of the year	26	·2
	12,996	100·00

The area open to grazing for horned cattle throughout the year was 87 per cent. The reduction in the period of closure from 10 to 5 years was continued in the 3 Thana and Panch Mahals Divisions except in cases where the growth was retarded by fires. In other parts closure was relaxed wherever necessary.

The two Khandesh, Poona and Ahmednagar Districts suffered from scarcity at the beginning of the rainy season and closed areas were therefore thrown open. Collection of *anjana* leaves for fodder was sanctioned and the period for recovery of grazing fees at single rates was extended according to the needs of the people.

Total remission of grazing fees was granted in the Sakri Taluka. Village cattle were allowed to graze in any forest within the district without payment of extra fees. The late rains in November 1936, however, brought about a general improvement in the prevailing conditions of fodder scarcity.

In the Bijapur District of the Southern Circle, owing to the partial failure of rains and consequent scarcity of fodder, closed coupes older than 3 years were thrown open.

The total number of cattle admitted to graze in the forests was 2,329,582 as against 2,379,892 of the previous year and 2,376,773 the average of the past 3 years. Of these 1,852,225 were horned cattle, 463,921 sheep and goats and 13,436 other animals. 583,044 cattle were admitted to free grazing as compared with 597,719.

There was on the whole a decline in the number of cattle taken to the forest for grazing. The Central and Southern Circles shared the decrease, but in the Northern Circle there was an increase because, owing to the widespread scarcity of fodder, forest grazing was resorted to on an unprecedented scale in the East Nasik Division. The decrease in the Central Circle was caused by omission from the returns of a number of cattle in the Sakri Taluka which had been allowed to graze free, owing to famine conditions prevailing. This number could not be ascertained because free passes were not issued by the village officers. The Conservator of Forests, Southern Circle, attributes the decrease in his Circle to migration of cattle of non-forest villages in the Bijapur District and in the Gokak and Gujnal ranges in Belgaum Division, and also to cattle disease in Dharwar District.

The grazing fees collected during the year amounted to Rs. 4,96,398 as against Rs. 5,07,912 in the last year, the value at full rates being Rs. 20,34,873. The fall in the amount of grazing fees is due to the following reasons (1) decrease in the number of paying cattle admitted as explained above, (2) extension of the period for payment of grazing fees at single rates, (3) remissions granted and (4) not charging village cattle in West Khandesh at non-village cattle rates when they moved to forests beyond their village within the district.

The number of cattle impounded during the year was 91,683 as compared with 83,208 in the previous year. The Northern and Southern Circles showed a decrease while the Central Circle recorded an increase. Owing to the distressed conditions occasioned by drought, orders were issued in the Northern Circle not to impound cattle found grazing without a pass in open forests. The decrease in the Southern Circle was mainly due to the policy of impounding cattle only in cases of deliberate trespass. The increase in the Central Circle is accounted for by (1) cattle straying into closed areas and (2) grazing offences in (contract) areas under exploitation being taken on the offence register in the Poona Division. Impounding was stopped in West Khandesh in the months of August, September and October 1936 in view of scarcity of fodder.

(d) *Protection against injuries from natural causes. Vegetable pests.*—Creepers cutting was carried out as usual through the agency of contractors and subordinates.

No lands were given out for cultivation on the condition of sowing tree species after eradicating lantana and those previously given in Poona range and Purandhar round of the Poona Division, were taken back. The cultivators do not show any desire to eradicate lantana and afforest the areas assigned to them, thus defeating the object of the system of combining forestry with agriculture in lantana infested areas.

The Cochineal insect introduced in prickly pear affected parts effectively destroyed the pest in the Poona and Satara Divisions and checked its growth and spread in the Dharwar-Bijapur and Belgaum Divisions. It is, however, reported that fresh sprouts, due perhaps to live roots in the soil, were observed in parts of Satara and Dharwar-Bijapur.

Loranthus was kept under control in the Southern Circle by removing and burning the affected stems or branches of trees.

Animal pest.—Rats, hares, porcupines, monkeys, nilgai, etc., caused a certain amount of damage in the plantations of the Northern Circle, while elephants, bison, sambhar, cheetal, monkeys, wild pigs, etc., were responsible for damage in the Southern Circle. The policy of destroying porcupine by offering rewards at Re. 1 per porcupine killed was continued in Kanara Western Division where this pest is frequently a serious menace to one year old teak plantations.

Insect pest.—Defoliators damaged young teak plantations in North and West Thana, Satara and Northern Division and Eastern Division, Kanara. Damage to young teak seedlings by Cock Chafer grubs was noticed in North and West Thana Divisions. Stump plants were used to replace damaged seedlings in the West Thana Division as it was noticed that stump plants on account of their thicker bark appear to be less susceptible to attack by the grub than seedlings.

Frost and erosion.—The severe frost of January 1937 in West Khandesh resulted in much damage to young teak in clear felled coupes of Narayanpur round, Nawapur range.

CHAPTER III.

SILVICULTURE.

1. SYSTEM OF MANAGEMENT.

The area in charge of the Forest Department aggregates 10,741 square miles of which 7,456 square miles are organised under various silvicultural systems as detailed below :—

Silvicultural system.	Area in square miles.	Percentage of the total area.
1. Clear felling	3,000	27·93
2. Selection	675	6·28
3. Uniform	312	2·91
4. Improvement felling	670	6·24
5. Selection-cum-improvement	237	2·21
6. Coppice with standards	1,319	12·28
7. Simple coppice	517	4·81
8. Other	726	6·75
Total under silvicultural systems ..	7,456	69·41
Protection, grazing and uncontrolled ..	3,286	30·59
Grand Total ..	10,742	100·00

2. GENERAL PROGRESS OF REGENERATION AND AFFORESTATION.

(a) *Mainly natural.*

The total area under mainly natural regeneration both concentrated and not concentrated was 62,893 acres as against 62,940 acres in the previous year, and was distributed as below :—

	Acres.
Northern Circle	22,110
Central Circle	25,934
Southern Circle	14,849
Total ..	62,893

(i) *Concentrated**Northern Circle.*

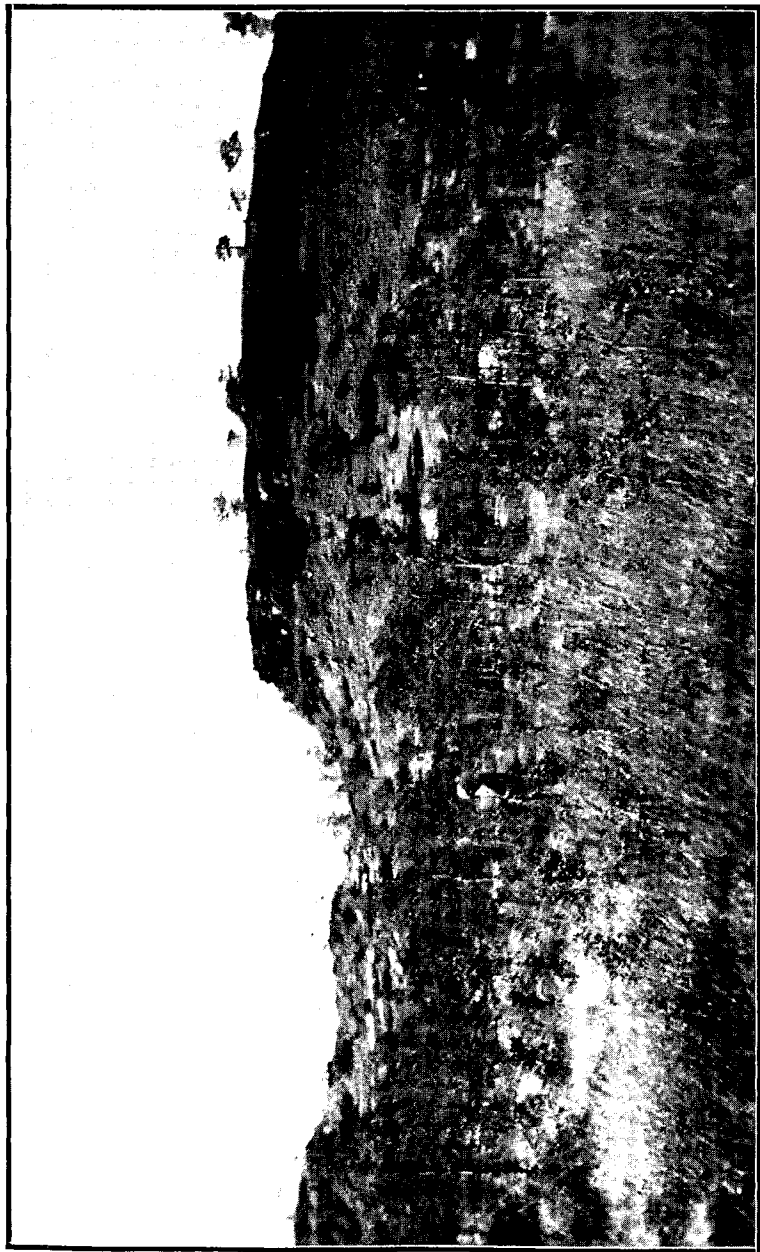
Panch Mahals.—Sowing and planting of teak and suitable injaili species were done on burnt rab patches, in blanks as usual. As firewood species are a valuable asset in this Division, regeneration of *babul*, *khair* and *nimb* was attempted on suitable soils. One year old stump-plants raised in dry nurseries were largely used. The area regenerated was 5,004 acres at a cost of Rs. 1,666. Owing to drought throughout the season, casualties were unusually heavy.

Thana Divisions.—The results of stump-planting and sowing of teak and suitable injaili seeds on rab are tabulated below :—

Division.	Total area of coupes regenerated.	Total area of rabs and kiln sites regenerated.	Number of rabs, patches or kiln sites prepared and planted with teak stumps or dibbled with seeds.	Number of germinations and additional transplants put out.	Survivals on 31st March 1937.	Cost of regeneration.
1	2	3	4	5	6	7
	Acres.	Acres.				Rs.
North Thana ..	2,943	339	6,323	493,393	408,819	8,568
East Thana ..	2,670	169	3,788	227,012	171,256	2,677
West Thana ..	2,176	252	4,136	413,725	301,509	2,818

Close planting in ordinary rabs with a view to eventual removal of excess plants for stump-planting was found in practice to have very bad effects. Stump plants raised a year in advance on "semi nursery rabs", i.e., *special rabs* which, unlike the ordinary ones, are sown up so as to produce teak seedlings 1' apart in lines 2' apart (instead of 6' × 6'), gave better results, and orders have, therefore, been issued to resort to this mode of planting on a larger scale. In some parts of West Thana where teak formed over 20 per cent. of the crop about 25 per cent. of the rabbed area was sown with valuable injaili species, e.g., *khair*, *ain*, *babul*, *tiwas*, *shiwan*, etc.

East Nasik.—5,138 acres were regenerated this year under the agri-cum-forestry system, which is now fairly well established in this Division, against 3,000 acres last year and 100 acres in 1933-34 when this system was first started. The number of plot-holders increased to 420, i.e., ten times the original number. This system has been beneficial both to Government and the landless classes, e.g., Bhils, Mahars,



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Konkanis, Warlis and other wild tribes. The former get their land regenerated free of cost and the latter get the land to raise crops free of assessment. In the general interests, these areas should be kept as reserved forests for production of fuel and grass which are dire necessities in this locality.

In the Baragaon Dangs and West Nasik regeneration work was satisfactory. Principally teak and, to a lesser degree, *shisum*, *bibla* and *shivan* were successfully raised on rabs in the former area.

Central Circle.

Natural regeneration was supplemented by artificial regeneration of teak and valuable injaili species on burnt rabs and kiln sites in exploited coupes. Teak was raised by sowing seed and planting stumps obtained from seedlings raised in nurseries or on rabs. Treated seed was used in the Kolaba Division. The results obtained in all the Divisions were satisfactory except in areas affected by drought. *Tiwa*, *sandal*, *khair*, *dhavda*, etc., were tried with satisfactory results. The following table gives the number of germinations and survivals :—

Division.	Number of germinations and transplants or root and shoot cuttings put in.	Bamboos.	Survivals on 31st March 1937.	
			Teak and injaili.	Bamboos.
East Khandesh	34,505	....	16,681	....
North Khandesh	95,960	....	63,341	....
West Khandesh	275,306	....	174,369	....
Poona	49,223	470	24,428	231
Kolaba	885,778	1,167	650,305	528
Satara	47,776	....	22,387	....

Sixty coupes as against fifty-five in the previous year were regenerated by the agri-cum-forestry method in the Kolaba Division. The Thakurs and Katkaris did this work willingly in return for the privilege of being allowed to raise a crop of *nagli* and *vairi*.

Experience has shown that stump planting is very helpful in establishing regeneration both quickly and easily. Owing to its advantages such as immunity from the effects of breaks in the monsoons, rapid growth and need of less attention in weeding and tending, greater use was made of stumps in the Kolaba Division. *Khair* also gave satisfactory results but *shivan* and *bamboo* proved failures. In the

Dhulia Range the raising of *anjan*, *babul*, *khair*, etc., by Bhils under the agri-cum-forestry system was more successful than last year but the failure of the rains proved a serious handicap. In the Satara Division also about 350 acres were given out for cultivation under this system.

Southern Circle.

Kanara N. D.—An area of about 1,008 acres of exploited teak pole and fuel coupes was under natural regeneration by means of stool shoots, suckers and self-sown seedlings, and it was supplemented by stump planting of teak, sandalwood and valuable junglewood species such as *matti*, *honni*, etc., over an area of 60 acres on burnt patches and in ploughed lines in the Haliyal teak pole forests.

Kanara E. D.—About 604 acres of Mundgod teak forests was regenerated from seed and coppice in addition to sowing and planting of teak on an area of 30 acres on burnt patches.

Kanara W. D.—Coppice growth of *matti*, *honni*, *kindal* and *jimba* was good over an area of 1,168 acres. Artificial regeneration of teak on a fairly intensive scale in an area of 530 acres was attempted with fair results.

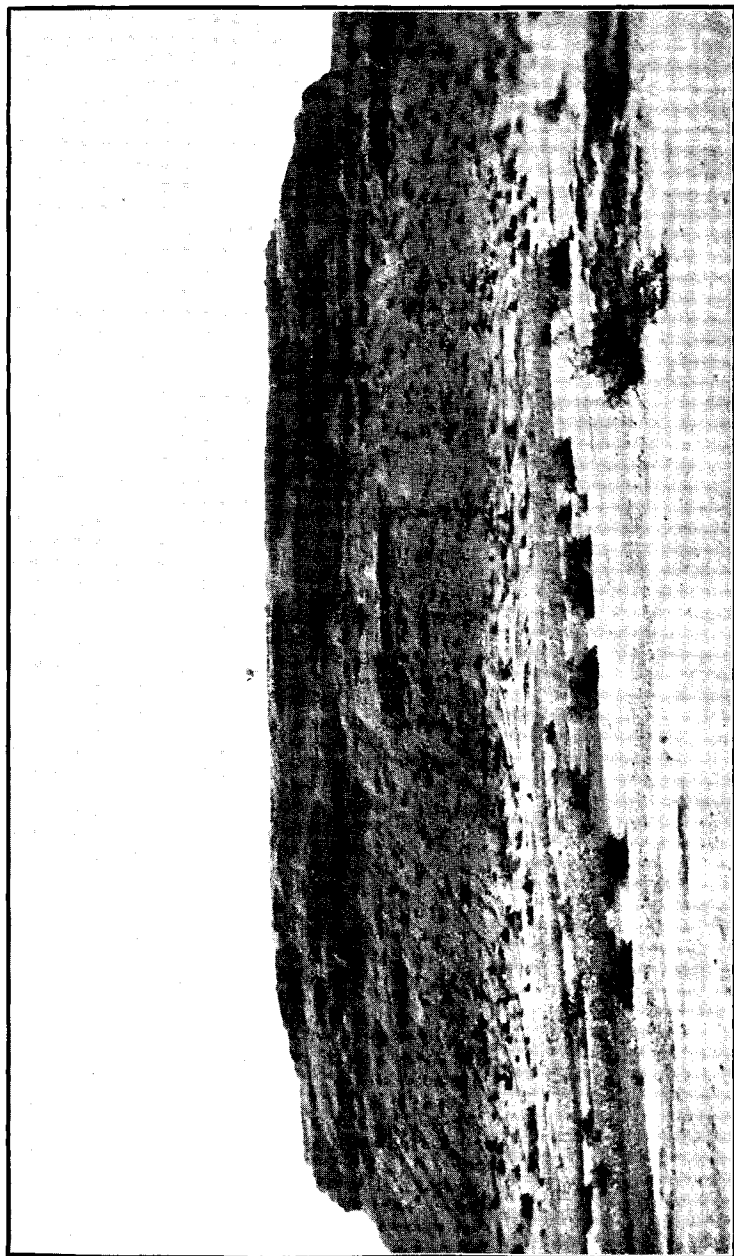
Belgaum Division.—Coppice growth over an area of 1,737 acres was satisfactory and the artificial regeneration of teak (35 acres) and sandalwood (233 acres) was particularly good in Khanapur and Nagargali ranges.

Dharwar-Bijapur.—Natural regeneration from coppice in an area of about 9,607 acres of exploited coupes was supplemented by (a) stump planting (68 acres) and sowing of sandalwood seed in burnt patches amounting to 17 acres in Dharwar, Kalghatgi and Hangal ranges, (b) sowing of *nimb*, *anjan*, *sirsal* and *tugli* seeds in Kod, Badami and Bagalkot ranges and (c) 117,195 dibbles of sandalwood seed made in lantana bushes in sandal bearing areas.

Natural regeneration from coppice was satisfactory while the results of artificial operations were rather poor in scrub forests, owing to insufficient rainfall, and satisfactory in teak pole areas.

(ii) *Not concentrated.*

In the Panch Mahals blanks (where rabs were not burnt) were sown with seeds of *babul*, *khair* and *nimb* with successful results. In spite of scanty rainfall 3 coupes which were sown with *babul* seed under the agri-cum-forestry system proved a success. In the East Nasik Division dibbling of teak, *anjan*, *nimb*, *mhowra* and *babul* in pits and furrows was carried out and the best results were obtained in the Baglan Range. Dibbling of sandalwood seed, carried out in recent years, is showing excellent results in this Division, and this species which is also spreading naturally from certain well-known foci, bids fair to enrich the Division considerably in future.



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Hill just outside Pedka Kurn showing erosion and lack of tree growth. It is not Forest.

Sandalwood seed dibbling was carried out in the Poona and Satara Divisions and the results in the former are satisfactory. *Kashid* and *nimb* were dibbled under bushes in the Satara Division.

(b) *Mainly artificial.*

No such plantations were undertaken in the Northern Circle. *Babul* was artificially raised in 792 acres in the Poona and the East and North Khandesh divisions. The results in East Khandesh were satisfactory. In North Khandesh there were 45,801 plants surviving at the close of the year while the results in the Poona Division are poor owing to the scanty rainfall.

Intensive regeneration of teak was carried out in the Southern Circle as under :—

Working Plan.	Area planted.	Method.
	Acres.	
1. Bhagwati High Forests working plan.	108	With an espacement of 12' × 6'.
2. Supa High Forest working plan ..	212	With an espacement of 9' × 9'.
3. Gund working plan ..	66	Do. do.
4. Nagzari working plan ..	12	Do. do.
5. Dandeli range ..	7	Planting on burnt patches in compartments worked under improvement fellings with an espacement of 6' × 6'.
6. Nirsol slopes working plan ..	40	With an espacement of 6' × 6'.
7. Revised working plan for Yellapur-Mundgod Teak High Forests.	70	Do. do.

In addition to the above an experimental plot of about 1 acre of the unorganised forests at Khodli in Supa Range of Kanara N. D., and 25 acres of regeneration coupe No. A/11 in Nagargali Range of the Belgaum Division were artificially regenerated. 1,430 teak stumps were planted in the former and 30,928 in the latter. An area of 150 acres in the Ramanguli-Ankola High Forests of Kanara W. D. was planted partly with one month old teak seedlings and partly with teak stumps with an espacement of 12' × 6'.

In the same Division eight months old casuarina plants raised in nurseries were transplanted with an espacement of 12' × 12' in an area of 45 acres of the Revised Working Plan for the casuarina plantations.

Sowing of *babul* seed in an area of 10 acres of the working plan for fuel and fodder reserves of the Bijapur District was carried out in lines 12' apart with field crops between the lines.

The condition of the plantation in the Nagargali Range of the Belgaum Division was excellent, that in the Supa Range of Kanara N. D. was uniformly good and at the end of the first season reached an average height of 4'. The rest of the plantations were satisfactory except that of *babul* in the Bijapur District which was only fair.

(c) *Afforestations.*

No afforestation was done during the year.

(d) *Tending of growing stock.*

Northern Circle.—As per sanctioned programme, cleanings were carried out in the Panch Mahals, in all the 5 year old coupes of the three Thana Divisions, and 19 coupes of the West Nasik Division. Most of this work was done by subordinates except in some cases in the three Thana Divisions, where the villagers did the work and removed the resultant material free in return for their labour. An expenditure of Rs. 238 was however incurred in the West Nasik Division.

Arrear thinnings carried out in the Panch Mahals at a cost of Rs. 3,733 brought in a revenue of Rs. 9,892 from the sale of the resultant material. In all 297 coupes were subjected to first thinnings in the three Thana Divisions, out of which 62 were worked departmentally and six by villagers who were allowed to remove the resultant material in return for their labour. The remaining were sold standing. The total revenue derived from the first thinnings was Rs. 19,401. Besides these "second" and "third" thinnings were done in 309 coupes (103 second thinnings and 206 third thinnings) and the revenue realised therefrom amounted to Rs. 3,20,650.

Arrear thinnings in coupes 7 and 8, Felling Series I, and coupes 13 (part), 14 and 15, Felling Series II, of the Casuarina Working Circle of the North Thana Division brought in a revenue of Rs. 721. The expenditure on thinnings in old plantations at Badgi in the West Nasik Division was Rs. 15 and the resultant material was sold for Rs. 45.

Central Circle.—Creeper cutting and other cultural operations such as cleanings, cutting back, etc., were carried out in all the Divisions. This work was mostly done by subordinates except in some cases in the Kolaba Division where *Kumriwallas* and certain villagers assisted and took the resultant material in return for their labour. Some work had, however, to be done departmentally and the total expenditure was Rs. 522.

Ten coupes in Teak Pole Working Circle in East Khandesh, 520 acres in North Khandesh, 19 coupes in the Mandvi Range, 327 coupes in the Poona Division, 81 coupes in the Kolaba Division and 3 coupes in the Satara Division were subjected to thinnings. These operations brought in a revenue of Rs. 14,389 as against an expenditure of Rs. 4,750. These figures include the revenue and expenditure (Rs. 3,859 and Rs. 840 respectively) on exploitation of dead, dying and wind fallen trees in *babul* areas of the Poona Division. 21 coupes for thinning remained in arrears in the Kolaba Division while the crop in 19 coupes did not need thinnings.

In most of the old coupes in the Kolaba Division no thinning operations in the real sense are necessary as the forests are either open or the growth of important species is deficient. The only need in such coupes is to remove the creepers and relieve the teak from competing useless species



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Natural Regeneration of Anjan in Pedka Kuran (Dhulia Range).

like *kakad*, *shemat*, etc., which smother the growth of valuable species. Continuous tending for at least five years is necessary in such coupes and the subordinates have been instructed accordingly. Thinnings in new plantation are however a necessity. Wherever this has not been done, the excellent growth of former years presents an aspect of neglect. To reduce the necessity for continuous tending the subordinates have been ordered to concentrate their efforts on planting teak in good soil with an espacement of not less than $6' \times 6'$ on rabs and to increase the spacing to $9' \times 12'$ in unburnt *nagli* areas.

Southern Circle.—All manner of cultural operations were carried out wherever necessary within the limit of funds available for the purpose. Improvement fellings were undertaken in 11 compartments in Northern Division, Kanara, 5 in Eastern Division, Kanara, 1 in Belgaum and 4 in Dharwar-Bijapur.

Thinnings were carried out in 2,041 acres of teak pole coupes and 302 acres of High Forest plantations in Kanara, Northern Division; 922 acres of plantations and 13 old coupes in teak pole areas of Eastern Division, Kanara; 147 acres of casuarina plantations and 1,957 acres of fuel coupes and High Forest compartments of Western Division, Kanara; 5 teak pole coupes and 2 regeneration areas of Belgaum and 9 coupes (577 acres) in Dharwar, Kalghatgi and Badami ranges of the Dharwar-Bijapur Division. The total revenue realised was Rs. 18,070 against an expenditure of Rs. 9,750 leaving a net profit of Rs. 8,320.

CHAPTER IV.

EXPLOITATION.

(a) SYSTEMS OF MANAGEMENT.

(i) *Major Forest Produce (Form No. 63).*

The various systems of exploitation and the areas worked under each are given in Chapter III under (1) System of Management.

Major forest produce was extracted in the Northern Circle almost solely through the agency of purchasers. In the Central Circle departmental operations were confined to extraction of fuel for the Government firewood depots at Mahableshwar, Panchgani and Matheran, and included such silvicultural operations as *watpad* and thinnings in the *babul* areas in the Poona Division. In the Southern Circle all material either for sale in lots or conversion into sawn material was extracted departmentally or through the agency of contractors from most of the High Forest areas, while waste wood left *in situ* and the standing crop in some of the High Forest compartments and Pole and Fuel coupes was sold to purchasers. Sandalwood was extracted departmentally and brought to the depots for conversion and sale.

(ii) *Minor Forest Produce (Form No. 64).*

Minor forest produce was either farmed out or sold on permits. 89 khandies of *hirda* were collected departmentally on the share system in the Poona Division and sold for Rs. 1,069.

(b) AGENCY OF EXPLOITATION.

(i) Departmental Agency.

The following is a comparative statement of major and minor produce extracted departmentally during the two years 1936-37 and 1935-36 :—

Circle.	Year.	Major Forest Produce.			
		Timber Cft. in thou- sands.	Fuel Cft. in thou- sands.	Total Cft. in thou- sands.	Sandal wood Value.
Northern	1936-37 ..	85	454	539	..
	1935-36 ..	139	558	697	..
Central	1936-37 ..	115	485	600	1,667
	1935-36 ..	17	454	471	1,047
Southern	1936-37 ..	672	2	674	96,405
	1935-36 ..	616	1	617	1,22,160
Total	1936-37 ..	872	941	1,813	98,072
	1935-36 ..	772	1,013	1,785	1,23,207
Difference ..	....	+100	-72	+28	-25,135
Percentage of total out- turn from all sources	....	13.6	2.1	3.7	100

Circle.	Year.	Minor Forest Produce			
		Bamboos Value.	Grass and grazing Value.	Other Value.	Total Value.
Northern	1936-37 ..	Rs. 18	Rs. ..	Rs. ..	Rs. 18
	1935-36 ..	5	..	..	5
Central	1936-37 ..	..	..	1,069	1,069
	1935-36 ..	..	..	1,002	1,002
Southern	1936-37 ..	20	..	75	95
	1935-36 ..	5	..	98	103
Total	1936-37 ..	38	..	1,144	1,182
	1935-36 ..	10	..	1,100	1,110
Difference ..	....	+28	..	+44	+72
Percentage of total out- turn from all sources	....	..	..	..	..

The decrease under timber and fuel in the Northern Circle is accounted for by the sale of the most of the "first thinning" coupes instead of working them departmentally. Departmental extraction was undertaken in the Central Circle for the purpose of maintaining supplies of fuel and charcoal at the Government depots and carrying out purely silvicultural operations in several divisions. The departmental working of a coupe in the West Khandesh Division and the intensive cleaning and thinning programme in the Main and Fuel Working Circles in the Poona Division contributed to the increase. The increase in the Southern Circle was due to the following reasons :—

(1) Better yield obtained from improvement fellings in Kanara, Northern Division ;

(2) Addition of the outturn of coupes worked under extensions in Kanara Eastern Division ; and

(3) The outturn from coupes departmentally thinned in the Belgaum and Dharwar-Bijapur divisions.

A large quantity of converted sandalwood is lying undisposed of in the Southern Circle for want of satisfactory demand. The value under sandalwood shown in the above statement is only an estimate based on market value. The increase in the Central Circle under sandalwood is due to the cutting of a large number of trees in East Khandesh and better prices obtained in the Satara Division. The Divisional Forest Officer, Poona, hopes to increase the revenue from this source by a systematic exploitation of sandalwood trees in his division. The present method of selling selected standing trees has therefore been stopped.

In the Central Circle the sale of *hirda* at a higher rate than last year was responsible for the increase under other produce which is a fluctuating item.

Timber Depots.—The average prices realised per Khandy of timber of various species at the five timber depots in the Presidency are given in the following table :—

Kind of timber.	Average rate per Khandy of 12·50 Cft.				
	Dandeli.		Kodibag.		Kirwatti.
	1936-37.	1935-36.	1936-37.	1935-36.	1936-37.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Teak ..	25 15 5	27 9 10	19 3 8	19 8 4	24 8 9
Matti ..	12 0 10	19 14 0	10 11 2	21 9 9	10 15 0
Nana ..	13 7 4	18 6 9	.....	.....	.....
Honne ..	13 14 2	19 1 1	10 3 8	.....	15 9 3
Sissum ..	11 4 5	15 6 10	13 12 1	17 15 6	9 5 4
Karimutal ..	16 1 9	18 0 8	.....	.....	26 3 10
Heddi ..	12 14 11	15 4 0	.....	.....	8 6 1
Other jungle wood ..	11 14 6	12 14 11	.....	.....	.....
Teak battens ..	19 14 2	23 0 1	.....	.....	.....
Teak scantlings.	22 5 4	23 11 11	.....	.....	.....
Teak planks ..	38 0 9	39 1 3	.....	.....	.....

Kind of timber.	Average rate per Khandy of 12·50 Cft.— <i>contd.</i>				
	Kirwatti — <i>contd.</i>	Katur.		Nasik.	
	1935-36.	1936-37.	1935-36.	1936-37.	1935-36.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Teak ..	23 2 10	25 4 4	24 10 1	....	....
Matti ..	15 1 8	11 13 1	13 11 8	....	....
Nana ..	....	....	....	....	....
Honne ..	19 10 11	15 5 4	18 12 8	....	....
Sissum ..	9 9 9	15 5 10	10 5 4	....	....
Karimtal ..	21 8 7	....	....	....	....
Heddi ..	11 4 2	....	10 0 0	....	....
Other jungle wood	9 5 4	....	....	....	....
Teak battens ..	23 3 11	....	....	6 4 0	18 12 0
Teak scantlings.	24 8 9	....	....	21 14 0	19 9 6
Teak planks ..	33 12 6	....	....	21 4 0	14 10 1

There was no Government timber for sale at the Hattikeri depot in Kanara, Western Division. All timber in the neighbouring High Forests was sold standing.

The appreciation in the price of teak at the Kirwatti and Katur depots in Kanara, Eastern Division, was due to a very limited stock. As the prices were speculative last year a depreciation was anticipated. The present improvement in the timber market however is a good augury for the future. The stock at Musla in the West Nasik Division was sold by tender *in situ* for want of a fair demand at the Nasik Depot.

Firewood Depots.—All the depots in the Northern and Southern Circles were worked through contractors. The depots at Sadashivgad and Majali in the latter Circle were abolished from 1st April 1937 as ordered by Government. The Mahableshwar and Matheran depots were worked departmentally. The demand for fuel and charcoal at the former depot did not improve owing to cheap supply of fuel from Malki lands. The Panchgani depot was worked through a contractor.

(ii) *Purchasers.*

The following table compares the outturn of major and minor produce removed by consumers and purchasers during the years 1936-37 and 1935-36 :—

Circle.	Year.	Major Forest Produce.				
		Timber.		Fuel.		Sandal wood Value.
		Cft. in thousands.	Value.	Cft. in thousands.	Value.	
			Rs.		Rs.	Rs.
Northern ..	1936-37 ..	2,653	14,37,866	8,004	19,077	..
	1935-36 ..	2,698	15,65,461	8,169	22,527	..
Central ..	1936-37 ..	966	3,78,852	4,635	76,789	..
	1935-36 ..	1,355	4,77,751	6,736	77,638	..
Southern ..	1936-37 ..	1,618	4,26,311	4,655	1,79,725	..
	1935-36 ..	1,504	3,26,602	7,958	1,90,391	..
Total ..	1936-37 ..	5,237	22,43,029	17,294	2,75,591	..
	1935-36 ..	5,557	23,69,814	22,863	2,90,556	..

Circle.	Year.	Minor Forest Produce.			
		Bamboos Value.	Grass and grazing Value.	Other minor produce Value.	Total Value.
		Rs.	Rs.	Rs.	Rs.
Northern ..	1936-37 ..	7,473	1,81,531	39,162	2,28,166
	1935-36 ..	6,864	1,85,846	28,397	2,21,107
Central ..	1936-37 ..	13,028	4,15,002	35,171	4,63,201
	1935-36 ..	15,142	4,37,925	36,710	4,89,777
Southern ..	1936-37 ..	47,173	81,008	27,750	1,55,931
	1935-36 ..	66,749	83,944	30,242	1,80,935
Total ..	1936-37 ..	67,674	6,77,541	1,02,083	8,47,298
	1935-36 ..	88,755	7,07,715	95,349	8,91,819

Northern Circle.—Poor stock in the coupes in the Panch Mahals coupled with the poor quality of the material marked in thinning coupes in the West Thana Division account for the decrease in the outturn under timber and fuel. The low prices prevailing for charcoal and fuel in Bombay during May and June 1936 and the large quantities of timber held in stock at some of the bunder depots in the North Thana Division had a depressing effect on coupe prices, which account for the decrease in the value of timber and fuel. Larger demands for bamboos in West Nasik and West Thana Divisions were responsible for an increase in receipts under this head. The receipts from grass and grazing fell on account of the low prices realised for grass from kurans and closed areas. The postponement of the sale of grass in closed coupes in North Thana till the question of supplying it to famine-stricken areas and subsequent orders to sell when it was dry and friable contributed to a further fall in the receipts. Higher prices for *timbru* leaves together with the recoveries of outstandings of the last year led to an increase under "other minor produce".

Central Circle.—Low prices for coupes due to depressed condition of the market and a number of coupes remaining unsold caused a deficit in the outturn and value under timber and fuel. There was little or no demand for bamboos. Fall in the receipts under grass and grazing was mainly caused by the famine conditions prevailing during the year.

Southern Circle.—The increase in the outturn and value under timber was due to the following reasons :—

(1) Better quality of High Forest compartments in Northern Division, Kanara, sold standing ;

(2) Sale of marked trees along the roadsides and in unorganised forests of Northern Division and Western Division, Kanara ; and

(3) Standing sale of more coupes in Eastern Division, Kanara, and some thinning coupes in Dharwar-Bijapur Division.

Sale of fewer coupes, inferior quality of the jungles and the disinclination of purchasers to extract inferior fuel owing to the unsatisfactory condition of the market account for the decrease under fuel. Acute depression in the bamboo trade had an adverse effect on the receipts from that commodity. The drop under grass and grazing is accounted for by the migration of cattle and the punctual realisation of grazing fees which left no necessity for recovery at double rates. The absence of a demand for *tali* palms and poor prices realised for some of the minor forest products caused a decrease under this head.

(iii) *Rights, Privileges and Free grants.*

The following is a comparative statement of the quantity and value of forest produce removed by right and privilege holders and free grantees during the years 1936-37 and 1935-36 :—

Circle.	Agency.	Major Forest Produce.				Minor Forest Produce.			
		Timber.		Fuel.		Bamboos Value.	Grass and grazing Value.	Other minor produce Value.	Total Value.
		Cft. in thousands.	Value.	Cft. in thousands.	Value.				
			Rs.		Rs.	Rs.	Rs.	Rs.	Rs.
Northern	C	--	--	6,692	1,55,353	71,591	10,78,713	1,24,014	12,74,318
	F	9	4,230	--	--	--	--	193	193
Central	C	--	41	9,246	5,71,818	--	1,80,891	3,07,990	4,88,881
	F	20	13,034	3	341	612	1,942	3,199	5,753
Southern	C	129	21,367	9,328	1,14,783	4,558	2,68,037	46,209	8,18,804
	F	43	11,286	--	--	466	3,547	5,998	10,011
Total	C	129	21,408	25,266	8,41,954	76,149	15,27,641	4,78,213	20,82,003
	F	72	28,550	3	341	1,078	5,489	9,390	15,957
Total 1935-36.	C	189	38,925	27,913	6,13,527	60,589	16,09,386	4,99,082	21,68,057
	F	89	27,823	6	213	1,113	26,575	8,781	36,469

C = Concessionists.

F = Free grantees.

The only recognised rights are those of way. Villagers enjoyed as usual the various privileges allowed under settlements, local rules and other Government orders. The quantity of material removed by concessionists is only an estimate based on the probable requirements of the villagers and varies each year since certain articles such as fencing posts, hutting materials etc., last for more than a year and are not therefore removed annually. The errors due to faulty method of calculation have now been rectified and this is responsible for the difference in the figures as compared with last year's.

Free grants of timber and other produce were given in deserving cases for repairing or reconstructing houses destroyed or damaged by fire and also for works of public utility such as temples, churches and schools.

(c) OUTTURN AND SOURCES OF FOREST PRODUCE.

The outturn from all sources of forest produce during the two years 1936-37 and 1935-36 compares as follows :—

Circle.	Year.	Major Forest Produce.			Minor Forest Produce.		
		Timber Cft. in thousands.	Fuel Cft. in thousands.	Sandal wood Value.	Bamboos Value.	Grass and grazing Value.	Other minor produce Value.
				Rs.	Rs.	Rs.	Rs.
Northern	1936-37 ..	2,747	15,150	—	79,082	12,60,244	1,63,369
	1935-36 ..	2,851	15,329	—	61,881	12,63,316	1,37,025
Central	1936-37 ..	1,101	14,369	1,667	13,640	5,97,835	3,47,429
	1935-36 ..	1,390	16,395	1,047	15,674	6,24,628	3,59,473
Southern	1936-37 ..	2,462	13,985	96,405	52,217	3,52,592	80,032
	1935-36 ..	2,343	19,068	1,22,160	72,912	4,25,809	1,06,416
Total	1936-37 ..	6,310	43,504	98,072	1,44,939	22,10,671	5,90,830
	1935-36 ..	6,584	50,792	1,23,207	1,50,467	23,13,553	6,02,914
Difference	..	-274	-7,288	-25,135	-5,528	-1,02,882	-12,084

The total expenditure on management of State Forest was :—

Circle.				1936-37.	1935-36.
				Rs.	Rs.
Northern	..	..	..	1,26,295	1,34,989
Central	..	..	..	97,371	58,521
Southern	..	..	..	5,27,287	5,78,829
Total				7,50,953	8,02,339

CHAPTER IV-A.

THE FOREST ENGINEERING BRANCH.

The work done by the Forest Engineering Branch was as under :—

1. SURVEYS.

Nil.

2. DESIGNS AND DRAWING WORK.

Northern Circle.

Project.	Division.	Nature of work.
Bhanwad-Mankhed Road ..	.. West Nasik	.. Plans and estimates.
New office building for Divisional Forest Officer, West Thana.	West Thana	.. Do.
Motor garage for 2 cars ..	.. Do.	.. Do.
Single seat latrine ..	.. Do.	.. Do.
Quarters for 2 peons ..	.. Do.	.. Do.
A corrugated motor garage..	.. Do.	.. Do.
Standard type building Type No. 4	.. East Thana	.. Do.
Ranger's quarters, Igatpuri..	.. Do.	.. Do.
Katcha guards' line ..	.. Dangs	.. Plans.

Central Circle.

Inspection bungalow and out-houses at Hayala.	West Khandesh	.. Plans and estimates.
Bungalow at Narayanpur ..	.. Do.	.. Do.
Approach road to Dhebewadi Rest House.	Satara	.. Do.

Southern Circle.

Office building for accommodating two offices in the compound of Dharwar Central Offices.	Direction	.. Plans and estimates.
New bungalow at Mundgod (modification of Standard Type B I).	Do.	.. Do.
Alterations and modifications to the original Type B I (Kiwatti bungalow).	Do.	.. Do.
Mandap in front of Ranger's quarters at Yellapur.	E. D. Kanara	.. Do.
Teakwood railing and trellis work to the verandah of the Kyatnalli bungalow.	Do.	.. Do.
Trestle bridge over Katur Bomanhalli Road.	Do.	.. Do.
Catchwater drain on Manglankop-Amatgar-Kurli Road.	Do.	.. Do.

In addition to the above, estimates for Shahabad paving in Standard Design for (R.G. 1) Rangers' quarters were submitted to the Chief Conservator.

The culverts on the Kadra-Shivpur Road were inspected.

3. CONSTRUCTION.

The Forest Engineer continued the general supervision over the construction of the Kurkas bridge in the Dangas, which was completed during the year. The causeway over the Masti Nala was also completed this year at a cost of Rs. 8,061 against the sanctioned estimate of Rs. 9,157. The saving was due to the contractor's carrying out the work at reduced rates. Repairs to the temporary engineering staff quarters and service reservoir were carried out as usual at a cost of Rs. 112.

4. FOREST EXPLOITATION.

(a) *Mechanical Skidding.*

The Fordson skidder was employed on timber extraction from compartment 22, Felling Series XI, Nagzari Valley, from 17th January 1937 to 27th January 1937. The outturn amounted to 38.66 tons in all against 960.21 tons of last year. The extraction costs exclusive of overhead charges amounted to Rs. 193-8-0 on account of labour etc., and Rs. 66-11-3 for fuel.

The animal winch was not worked during the year.

(b) *Sawmilling.*

1. The sub-joined table shows the mills that were worked departmentally in the year under report, their total output together with the average cost of conversion excluding overhead charges and similar figures for the previous four years :—

Name of mill.		Total output.				
		1936-37.	1935-36.	1934-35.	1933-34.	1932-33.
		Cft.	Cft.	Cft.	Cft.	Cft.
Dandeli	{	200,913	259,084	247,059	195,760	286,796
Mandurli		at 3.15 as. per Cft.	at 3.34 as. per Cft.	at 3.35 as. per Cft.	at 4.36 as. per Cft.	at 4.01 as. per Cft.

Conversion of small dimension stock, owing to limited demand from the M. & S. M. Railway for crossing, bridge and M.G. sleepers accounts for the decrease.

2. *Dead-stock and stores.*—The dead stock of each of the mills was checked with the registers. Unserviceable articles were either repaired



G. P. Z. P. 1938.

Saw sharpener at Dandeli.

or written off under proper authority. The total value of stores supplied to the mills is given below :—

		Rs.	a.	p.	
(1) Dead stock	..	5	4	0	(Capital expenditure).
(2) Consumable stores	..	7,015	12	10	(Revenue expenditure).

3. *Progress of saw milling.*—The accompanying table shows the output and average sawing charges incurred under the head stores, labour, establishment, excluding overhead charges.

Serial No.	Name of Saw Mill.	Output during the year.			Average sawing cost per Cft. Stores.		
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
	<i>Southern Circle.</i>	Cft.	Cft.	Cft.	As.	As.	As.
1	Dandeli Saw Mill ..	125,446	161,389	150,270	0·90	0·76	0·55
2	Mandurli Saw Mill ..	62,524	58,990	50,643	0·68	0·72	0·60
3	Kirwatti Saw Mill ..	59,089	36,705	Closed down.	0·49	0·43	Closed down.
	Total ..	247,059	259,084	200,913	0·75	0·71	0·55

No.	Name of Saw Mill.	Average sawing cost per Cft. Labour.			Average sawing cost per Cft. Establishment.			Total excluding overhead charges per Cft.		
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
	<i>Southern Circle.</i>	As.	As.	As.	As.	As.	As.	As.	As.	As.
1	Dandeli Saw Mill ..	2·79	2·47	2·46	0·47	0·41	0·43	4·16	3·64	3·44
2	Mandurli Saw Mill ..	1·42	1·56	1·43	0·35	0·25	0·37	2·45	2·53	2·40 (a)
3	Kirwatti Saw Mill ..	2·26	2·16	Closed down.	0·70	0·72	Closed down.	3·45	3·36	Closed down. (b).
	Total ..	2·31	2·21	2·19	0·49	0·42	0·41	3·55	3·34	3·15

(a) The Mill was finally closed on 1st February 1937.

(b) This Mill was finally closed on 1st November 1935.

Sawmill Trading Accounts.—The trading accounts of the Dandeli and Mandurli mills as well as the store account of the Forest Engineer for the year 1935–36 were audited by the Outside Audit Branch of the Accountant General's Office.

Of the two sawmills, viz. Dandeli and Mandurli, that were worked departmentally, the latter was finally closed down on 1st February 1937 after working for 10 months.

The results of the working of the above mills are summarised below :—

Items.	Dandeli mill.		Mandurli mill.	
	1936–37.	1935–36.	1936–37 (from 1st March 1936, to 1st February 1937).	1935–36.
	Rs.	Rs.	Rs.	Rs.
Revenue	2,94,209	3,58,271	1,10,079	1,30,829
Expenditure	1,40,022	1,60,970	34,870	40,648
Net profit	1,54,187	1,97,301	76,109	90,181
Capital at charge	81,934	87,564	24,637	33,530
Percentage of net profit on capital.	188	225	309	269

The fall in revenue at the Dandeli mill is due partly to decrease in output and partly to lower prices obtained in the auction sale for sawn material. The profit made by the Mandurli mill is for the period of 10 months and compares favourably with its profit for the whole of the previous year.

Private sawmills.—Mr. Sayad Nasroddin Hasansab's saw mill at Katur in Kanara, East Division, produced 1,000 M. G. sleepers and 13,400 C.ft. of other sawn material against 1,115 M. G. sleepers and 13,000 C.ft. of other sawn wood in the preceding year.

CHAPTER V.

FINANCIAL RESULTS.

(Forms Nos. 68, 69 and 70.)

The revenue and expenditure of the year compare with those of the last year and average of the previous quinquennium 1931-32 to 1935-36 as follows :—

Circle.	Year.	Revenue.	Expenditure.				Surplus or Deficit.	Percentage of surplus to gross Revenue.
			Conser- vancy, main- tenance and Rege- neration.	Forest Capital Outlay.	Estab- lish- ment.	Total.		
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Northern ..	1936-37	18,04,148	1 19,387	10,820	5,88,549	7,18,806	10,85,342	40.2
	1935-36	19,36,349	1,23,656	12,856	5,68,408	7,04,920	12,31,429	63.6
	Average	18,79,227	1,76,080	35,563	6,11,144	8,22,787	10,56,440	56.2
Central ..	1936-37	10,62,310	84,305	27,298	6,30,147	7,41,759	3,20,560	30.1
	1935-36	11,87,144	78,645	23,228	6,17,025	7,19,498	4,67,643	39.4
	Average	10,60,823	76,084	9,036	5,80,343	6,65,413	3,95,410	37.3
Southern ..	1936-37	18,90,160	5,16,000	11,337	5,89,733	11,17,570	7,72,590	40.9
	1935-36	20,82,990	5,64,122	14,87	5,57,722	11,36,731	9,46,168	45.4
	Average	21,90,185	8,01,359	19,290	5,63,700	13,84,400	8,06,776	36.8
General Direction.	1936-37	12,690	93,946	..	89,959	1,83,905	1,71,215	..
	1935-36	..	96,307	33	75,372	1,71,712	1,71,712	..
	Average	28	1,08,624	49	72,663	1,80,136	1,80,108	..
Forest Engi- neering.	1936-37	2,376	9,659	..	35,414	45,073	42,696	..
	1935-36	3,637	13,170	—42	39,089	52,817	49,180	..
	Average	2,373	20,800	—141	46,148	66,816	64,443	..
Total Presi- dency.	1936-37	47,71,684	8,23,897	49,405	10,33,802	28,07,104	19,64,580	41.2
	1935-36	52,10,029	8,75,900	50,962	18,58,816	27,85,078	24,24,351	46.5
	Average	51,32,636	11,82,306	63,797	18,73,458	31,19,561	20,13,075	39.2
Difference bet- ween	1936-37 and 1935-36	4,38,345	— 52,103	— 1,557	+ 74,986	+ 21,426	— 4,59,771	

The revenue shown against the General Direction Division includes recovery of Rs. 12,664 on account of leave, passage and pension contributions in respect of gazetted Forest officers in Sind.

All the circles show a decrease. In the Northern Circle it was due partly to the poor prices realised for the timber coupes in the Thana Divisions and partly to poor stock found in the annual coupes. In the Central Circle the decrease is explained as due to (1) low prices obtained for coupes in most of the divisions, (2) less recovery of grazing fees due to famine and (3) some of the coupes in West Khandesh, Poona and Kolaba remaining unsold. In the Southern Circle there was an increase in revenue in the Eastern and Western Kanara Divisions but it was more than counterbalanced by a decrease in Northern Division Kanara, Belgaum and Dharwar-Bijapur. The reduction in the number of bridge and crossing sleepers and other sawn material supplied to the M. & S. M. Railway, the drop in prices realised in the sales at Dandeli and Kodibag depots, the depression in the bamboo market, the withholding of several coupes from sale in the Dharwar-Bijapur Division, the progressive fall in the prices of sandalwood and the difficulty experienced in disposing of Dharwar sandalwood before the close of the year were responsible for the decrease. Postponement of the sale of surplus mill dead-stock is responsible for the fall in receipts of the Forest Engineering Division.

All the circles except the Central Circle show a decrease in expenditure under "B—Conservancy, Maintenance and Regeneration". The decrease in the Northern Circle was due to (1) most of the "first thinning" coupes being sold to purchasers instead of being worked departmentally, (2) closing down of the Igatpuri fuel depot and (3) transfer of some of the buildings to the Public Works Department for maintenance. Savings in the Southern Circle were effected in charges on exploitation of timber, regeneration and structural works. Supply of more clothing articles and miscellaneous expenditure under "Conservancy and regeneration" in the West Khandesh Division were responsible for the excess under this head in the Central Circle.

As under "B—Conservancy, Maintenance and Regeneration", so also under "52—A Capital Outlay on Forests" the Central Circle alone shows an increase. The construction of the Narayanpur rest house and some buildings for subordinates were responsible for this increase. In the aggregate, however, there is a decrease under this head. The increase under "C—Establishment" is due to the usual annual increments in pay, revival of the working plans office in the Northern Circle and to the cost of the two new recruits appointed to Class I.

The analysis of receipts and expenditure shows that, of the receipts, 76 per cent. came from major produce, 18 per cent. from minor produce and 6 per cent. from miscellaneous sources; while of the expenditure 33 per cent. was incurred on extension, constitution, improvement and exploitation of forests and 66 per cent. on administrative, executive and protective charges and 1 per cent. on miscellaneous items.

The expenditure incurred from the provision under "52-A, Capital Outlay on Forests", subsequently charged to revenue is as shown below :—

Heads.	General Direction.	Forest Engineering Branch.	Northern Circle.	Central Circle.	Southern Circle.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I. Surveys	..	..	..	..	..	..
II. Organisation, Improvement and Extension ..	..	..	49	15	510	574
III. Communications and buildings	..	..	9,667	26,473	10,210	46,350
IV. Railways and tramways ..	..	..	..	..	..	..
V. Livestock, stores, tools and plant	..	..	1,154	810	518	2,482
Deduct—receipts and recoveries on Capital account ..	..	..	..	..	..	..
Total ..	..	..	10,870	27,298	11,238	49,406

The outstandings on account of revenue at the commencement and close of the year were :—

				On 1st April 1936.	On 31st March 1937.
				Rs.	Rs.
Northern Circle	..	..	..	1,01,273	49,255
Central Circle	..	..	..	12,733	14,055
Southern Circle	..	..	..	1,83,014	1,99,189
Total ..				2,97,020	2,62,499

The outstandings on account of contractors and disbursers were as follows :—

				On 1st April 1936.	On 31st March 1937.
				Rs.	Rs.
Northern Circle	..	..	..	84	....
Central Circle	..	..	..	46	40
Southern Circle	..	..	..	4,138	4,138
Total ..				4,268	4,178

CHAPTER VI.

RESEARCH AND EXPERIMENT.

In the absence of a separate organization to deal with silviculture and research the Chief Conservator's office continued to control research work of a general character. After the transfer of the subjects pertaining to Sind to the Conservator of Forests, Sind, due to its separation, there remained seven subjects only under investigation during the year. Problems of purely local interest were taken up for investigation by the Divisional Forest Officers concerned under the control of their Conservators.

The work done and observations made are described below :—

NATURAL REGENERATION.

*Sandal (Santalum-album).**Subject No. 28.—Effect of early burning on sandalwood growth and regeneration (Belgaum Division).*

In December 1936, third remeasurement of trees was taken in each of the plots 28-A and 28-B and the trees were reclassified into 1" girth and 3' height. The results are :—

				Plot A. (Fire pro- tected.)	Plot B. (Early burnt.)
				Average girth.	
Original measurement 1933	..	..	..	4.9"	5.59"
I Re-measurement 1934	..	..	..	5.60"	5.65"
II Re-measurement 1935	..	..	..	5.63"	5.65"
III Re-measurement 1936	..	..	..	5.93"	5.97"
				Average height.	
Original measurement	..	..	..	12.12'	12.27'
I Re-measurement	..	..	..	12.66'	12.84'
II Re-measurement	..	..	..	12.72'	12.87'
III Re-measurement	..	..	..	12.90'	12.83'

There was no appreciable difference in average girth or height. The leaders of 41 trees in plot A and 35 trees in plot B were broken and this might probably be the cause of poor average height. The Divisional Forest Officer reported that profuse natural regeneration was noticeable in plot A and very little in plot B.

ARTIFICIAL REGENERATION.

Hirda (Terminalia chebula).

Subject No. 37.—Sowing and planting on laterite soil in the shade of existing shrubs or small trees (Poona and Satara Divisions).

Out of 60 seedlings and 66 transplants of *hirda* that survived at the close of the last year in the two plots in the Poona Division, 40 seedlings and 47 transplants are now surviving. These survivals appear sickly and have not put on much height growth. The average height is about 6".

On the Mahableshwar plateau of the Satara Division, *hirda* seed was sown in 100 pits (2 seeds in a pit) in laterite soil under the shade of bushes. Out of these only 27 germinated and 8 seedlings are surviving.

THINNINGS AND CLEANINGS.

Subject No. 4.—Effect of thinnings on teak coppice at different ages (East Thana Division).

Eight plots ranging from 8 to 15 years of age are under observation, with a view to finding out the effect of thinning on teak coppice at different ages and the relative value of retaining one, two and three stems on each stool. Each of the plots is divided into two sub-plots (a) and (b). Keeping the sub-plot (a) unthinned to serve as a control plot, in sub-plot (b) one, two and three stems were respectively retained on stools bearing two, three and more than three shoots.

Measurements of girth are to be recorded every two years and of height every ten years.

The measurements have been so far recorded and the indications are as follows :—

- (1) the girth increment in the thinned plot is more than in the unthinned one,
- (2) the crop thinned at 8 years of age, i.e. the youngest crop, has given the highest girth increment and
- (3) the girth increments put on by one, two and three stems on a stool are :—

1 stem	..	..	.. 23·61	per cent.
2 stems	..	..	.. 18·64	per cent.
3 stems	..	..	.. 17·25	per cent.
Control (all stems)	..	..	.. 12·89	per cent.

Many more re-measurements are required for obtaining reliable data.

MISCELLANEOUS SPECIES.

Subject No. 16.—Effect of improvement fellings on diameter growth. (Dangs Division)..

The third re-measurement was taken in December last. Three successive re-measurements given below show the percentage of increment :—

				1930.	1933.	1936.	Mean.
				Per cent.	Per cent.	Per cent.	Per cent
Plot No. 16-A (Improvement felled)	--	..	..	14.1	10.5	12.46	12.35
Plot No. 16-B (control)	--	..	..	4.1	4.3	5.83	4.74

The above figures conclusively prove that the diameter growth in the improvement felled plot is considerably greater, i.e. over 50 per cent. than that in the control plot.

The experiment is being continued.

MISCELLANEOUS.

Sandal (Santalum album).

Subject No. 7.—Annual girth increment of sandal. (Belgaum and Dharwar Bijapur Divisions).

The next re-measurements in plots 7A-I to IV and 7B-I and II are due in May 1937 and November 1937, respectively.

Subject No. 32.—Correlation existing between the outer girth increment and heartwood increment of sandal. (Dharwar-Bijapur Division).

The two plots are in good order and the next measurements and borings are due in 1938-39.

PHENOLOGICAL OBSERVATIONS.

Phenological observations were undertaken on sets of five trees in each of the Panch Mahals, North Khandesh, North Thana, East Khandesh, West Khandesh and Kanara Northern Divisions. The trees in East and North Khandesh being badly attacked by defoliators and most of them not bearing flower nor fruit during the season were abandoned. The records of trees in other divisions were sent to the Silviculturist, Forest Research Institute, after the close of the year.

The following is a summary of the observations :—

Species—Teak.

Season 1936-37.

Serial No.	Phenomena.	Panch Mahals.	North Thana.	West Khandesh.	N. D. Kanara (Dandeli).	N. D. Kanara (Kulgi).
1	Beginning of opening of leaf buds.	30th June..	15th June ..	13th June ..	15th April ..	14th May.
2	Completion of new leafing.	16th July ..	26th June ..	8th July ..	2nd June ..	2nd June.
3	Beginning of opening of flowers.	15th August.	27th July ..	31st July ..	6th August.	23th June.
4	Maximum of flowering.	25th August.	6th August.	12th August.	20th August.	24th July.
5	End of flowering	30th August.	12th August.	27th August.	3rd Sept- ember.	7th August.
6	First ripe fruit	4th Novem- ber.	21st Novem- ber.	30th Sept- ember.	22nd Octo- ber.	9th Septem- ber.
7	Most or all fruit ripe	20th Nov- ember.	31st Janu- ary.	3rd Novem- ber.	20th Octo- ber.	19th Novem- ber.
8	Beginning of falling of seeds or fruit.	11th Decem- ber.	11th Decem- ber.	20th Nov- ember.	6th Nov- ember.	11th Decem- ber.
9	Most fruits or seeds fallen.	23rd Dec- ember.	12th Febru- ary.	7th Febru- ary.	30th Janu- ary.	3rd Febru- ary.
10	All good fruits or seeds fallen.	4th Janu- ary.	20th Febru- ary.	28th March.	31st March.	1st April.
11	Commencement of leaf-fall.	4th Nov- ember.	18th Dec- ember.	5th Nov- ember.	15th Janu- ary.	2nd March.
12	Completion of leaf-fall.	10th Febru- ary.	9th March.	28th March.	20th March.	27th March.

ENTEROLOBIUM TIMBOUVA MART.

A small quantity of seed of *Enterolobium Timbouva Mart* received from the Argentine Republic was sown in boxes at Mahableshwar in July 1935. None of the seeds germinated. In December of the same year the seeds were taken out and resown this time in baskets. A month after, one seed germinated and after a month and half 6 more germinations were observed. Out of these 7 seedlings, 3 were alive up to December last but subsequently 2 of them died. The solitary survival is reported to be vigorous and is about 25" in height.

TUNG TREES (ALEURITES FORDII).

Out of the 3 survivals in the Sambrani range in Kanara N. D. one died and the 2 are progressing satisfactorily. The height increment in one case was 13" while in the other 8". The plant at Tatwal has now attained a height of 20".

As the climate of the Haliyal Taluka is considered to be eminently suitable for this species a wet nursery has been prepared at Bomanhalli for further experiments and out of 396 seeds sown on 30th January, 77 germinated to end of March. The seed was sown 12" apart in raised manured beds and the present condition of the seedlings is reported to be fair. Germination commenced on 26th February and might possibly continue till 15th April.

ERADICATION OF PRICKLY PEAR BY COCHINEAL INSECTS.

This has been dealt with in Chapter II under vegetable pests. Sprouts were observed in the Dharwar-Bijapur and Satara Divisions. It remains to be seen whether this new crop will die without having to introduce the insects again. The existence of old swarms in the locality has not been observed.

NEW EXPERIMENTS.

In the year under report 5 new plots were laid out in the Poona Division, 3 at Bhimashankar to study the problem of natural regeneration in ever-green forests and 2 near Poona for observing the effect of sheep grazing on tree regeneration in an area hitherto closed to sheep. Registers in the standard forms and allocation surveys have been prepared for these plots.

OTHER EXPERIMENTS CARRIED OUT BY DIVISIONAL FOREST OFFICERS.

West Nasik.

The experiment of using ammonium sulphate as a fertiliser to encourage growth of teak stumps on unburnt ground which was started in the West Nasik Division 2 years ago was concluded during the year. The results recorded below prove that the use of ammonium sulphate is advantageous in the case of teak stumps planted on unburnt ground ; but previous burning of the soil coupled with this treatment give far better results :—

					Stumps raised with ammo- nium sulphate.	Stumps raised without ammo- nium sulphate.
Average height	..	..	..	..	6'-2"	5'
Average girth	..	..	..	..	6"	4½"

East Thana.

The attempts at reboising deserted village sites and fallows in the Tansa catchment area with *Bauhinia racemosa* in order to minimise the danger of frequent fires having proved impracticable owing to heavy cost of weeding, the rab method of regeneration was tried during the year. *Cassia siamea* (kashid), *Eugenia jambolana* and *Mangifera indica* show promise of success. The plants of the first species have reached an average height of 3'-6", look vigorous and are found to be immune to damage by browsing of wild animals. The latter two species are badly browsed by wild animals. It is not intended to do any elaborate weeding but merely to remove grass within a radius of 5' round the plants to minimise damage by fire.

As a result of the experiments tried in Igatpuri range for re-clothing the hill-sides and *karwand*-infested areas, it is found that :—

- (1) Aloe is suitable on these hill-sides ;
- (2) Mango thrives well under *karwand* which protects it from cattle and wild animals ;
- (3) Sandalwood grows well under *karwand* ; and
- (4) *Jambul* grows well and looks promising in blanks.

West Thana.

It is found in West Thana that teak stumps put out in the first fortnight of the monsoon yield optimum results.

East, North and West Khandesh and Satara.

The experiment of pollarding *temburni* trees for obtaining larger and softer leaves was carried out in each of the divisions mentioned above and the results obtained were satisfactory. In East Khandesh a better price, viz. Rs. 604, was realised for *temburni* leaves against Rs. 260 of the previous year as a result of this experiment.

Satara.

Teak plantations were made in the evergreen forests of Patan and Dhebewadi range during the last four years and they have shown good results. The 4-year old crop varies in height from 6' to 12'. This experiment shows that teak can replace tree growth in evergreen forests at an elevation below 2,500 feet, but it needs protection against strong winds.

Cypress seed was sown in June 1935 at Mahableshwar in earthen pots. Germination was plentiful but the survivals in November 1936 were only 4. Seventy-two seedlings raised in the rains of 1936 at Satara were sent to Mahableshwar for planting in October 1936. Of these 53 were surviving by the end of April 1937 and their height varied from 2" to 4". They are not as yet fit for transplanting.

CHAPTER VII.

ADMINISTRATION.

The post of Chief Conservator was held by Mr. C. E. L. Gilbert from 1st April 1936 to 6th November 1936 and by Mr. A. C. Hiley from 7th November onwards.

The territorial circles were held by the following officers :—

Northern Circle	.. Mr. H. W. Starte, from 1st April 1936 to 31st March 1937.
Central Circle	.. Mr. R. W. Inder, from 1st April 1936 to 5th October 1936. Mr. C. E. L. Gilbert, from 6th October 1936 to 8th October 1936. Mr. A. C. Hiley, from 9th October 1936 to 6th November 1936. Mr. J. B. T. Brooks, from 7th November 1936 to 31st March 1937.
Southern Circle	.. Mr. A. C. Hiley, from 1st April 1936 to 6th October 1936. Mr. R. W. Inder, from 7th October 1936 to 31st March 1937.
Forest Engineering Branch.	Mr. R. V. Alexander, from 1st April 1936 to 31st March 1937.

The Divisional charges were held by officers named below :—

Division.	Name of Officer.	From	To
Panch Mahals ..	Mr. S. P. Pandya ..	1st April 1936 ..	31st March 1937.
North Thana ..	Mr. G. S. Singh ..	1st April 1936 ..	31st March 1937.
East Thana ..	Mr. R. J. Smith ..	1st April 1936 ..	10th April 1936.
	Mr. J. A. Singh ..	11th April 1936 ..	31st March 1937.
West Thana ..	Mr. T. K. Mirchandani	1st April 1936 ..	31st March 1937.
East Nasik ..	Mr. V. N. Sausman ..	1st April 1936 ..	6th December 1936.
	Mr. S. N. Kesarcodi ..	7th December 1936 ..	31st March 1937.
West Nasik ..	Mr. J. Walker ..	1st April 1936 ..	10th April 1936.
	Mr. R. J. Smith ..	11th April 1936 ..	31st March 1937.
Working Plans, N. C.	Mr. H. W. Starte ..	1st April 1936 ..	11th November 1936.
	Mr. J. Walker ..	12th November 1936.	31st March 1937.
Gurcharan Officer, Thana.	Mr. F. X. Saldanha ..	1st April 1936 ..	31st March 1937.
East Khandesh ..	Mr. O. B. Parikh ..	1st April 1936 ..	4th June 1936.
	Mr. H. J. C. Millett ..	5th June 1936 ..	31st March 1937.
North Khandesh ..	Mr. V. N. Hasabnis ..	1st April 1936 ..	10th May 1936.
	Mr. R. P. Dalley ..	11th May 1936 ..	21st June 1936.
	Mr. V. N. Hasabnis ..	22nd June 1936 ..	22nd February 1937.
	Mr. A. D. Mufti ..	23rd February 1937 ..	31st March 1937.

Division.	Name of Officer.	From	To
West Khandesh..	Mr. R. P. Dalley ..	1st April 1936 ..	31st March 1937.
Poona ..	Mr. E. S. B. Tavener.	1st April 1936 ..	31st March 1937.
Kolaba ..	Mr. Y. R. Divekar ..	1st April 1936 ..	31st March 1937.
Satara ..	Mr. W. C. deC. Walsh.	1st April 1936 ..	5th November 1936.
	Mr. R. A. Shirali ..	6th November 1936 ..	31st March 1937.
Working Plans, C. C.	Mr. J. A. Singh ..	1st April 1936 ..	10th April 1936.
	Mr. E. S. B. Tavener.	11th April 1936 ..	15th May 1936.
	Mr. E. A. Garland ..	16th May 1936 ..	31st March 1937.
Kanara, N. D. ..	Khan Bahadur S. N. J. Ratnagar.	1st April 1936 ..	31st March 1937.
Kanara, E. D. ..	Mr. R. F. Sandeman .	1st April 1936 ..	16th December 1936.
	Mr. A. D. Mufti ..	17th December 1936.	3rd January 1937.
	Mr. R. F. Sandeman .	4th January 1937 ..	31st March 1937.
Kanara, W. D. ..	Mr. E. T. C. Vas ..	1st April 1936 ..	31st March 1937.
Belgaum ..	Mr. H. C. Holmes ..	1st April 1936 ..	31st March 1937.
Dharwar-Bijapur.	Mr. R. A. Shirali ..	1st April 1936 ..	4th November 1936.
	Mr. A. D. Mufti ..	5th November 1936 ..	8th November 1936.
	Mr. W. C. deC. Walsh.	9th November 1936 ..	31st March 1937.
Working Plans, S. C.	Mr. F. A. B. Coelho .	1st April 1936 ..	3rd August 1936.
	Mr. H. P. W. Davis .	4th August 1936 ..	31st March 1937.

The changes among the Divisional Forest Officers were fewer than in the previous year and were due to transfers or absence on leave of officers.

At the close of the year the number of officers attached to Divisions as Assistants or Sub-Divisional Forest Officers was 12, out of whom, 3 belonged to Class I and 9 to Class II.

On 7th November 1936 Mr. C. E. L. Gilbert, Chief Conservator of Forests, proceeded on leave preparatory to retirement on 2nd April 1937. The title of C.I.E. was conferred on him in January 1937. At the time of writing this report the sad news has been received of his death in England barely 4 months after his retirement.

Mr. V. N. Hasabnis, Class I Officer, has been granted leave preparatory to retirement.

Messrs. H. P. W. Davis and V. N. Hasabnis, Deputy Conservators of Forests, and W. E. Perreira, Assistant Conservator of Forests, and Personal Assistant to the Chief Conservator were among the recipients of honours on the occasion of the new year and Coronation of His Majesty the King Emperor. The first officer received a "Second Class Kesar-i-Hind" Medal while the other two were admitted to the membership of the "Most Excellent Order of the British Empire".

Messrs. J. V. Karamchandani and Hari Singh direct recruits to Class I joined their appointments on 6th October 1936.

Mr. R. R. Chaudhari, Deputy Conservator, was awarded the second prize of £ 25 from Currie Scholarship Fund during the year.

SUBORDINATE AND CLERICAL SERVICE.

The six candidates selected for 1937-39 Rangers' Course having satisfactorily completed their practical training joined the Forest College at Coimbatore shortly after the close of the year.

The Foresters' Class at Mandvi in the Northern Circle was conducted by a Ranger. Out of the 24 students (12 from the Northern Circle, 10 from the Central Circle and 2 from Indian States) 2 were sent back as it was found in an *interim* examination that they could not follow the course. Twenty-one of the remaining students passed the final examination. The annual course in the Southern Circle for training Foresters and guards under selected Rangers was continued and seven out of the eight subordinates passed the test.

The title of "Rao Sahab" was conferred on Messrs. N. K. Joshi and D. A. Desai, Rangers.

The work of the Rangers and subordinate protective and clerical staff is reported to be satisfactory.

CASUALTIES AND PUNISHMENTS.

The cases pending against one Round Guard and two guards in the East Thana Division ended in the conviction of the Round Guard, who was sentenced to pay a fine of Rs. 100 or in default to undergo one month's imprisonment. The guards were acquitted.

One case of impersonation and the other of giving false information occurred in the Central Circle. In the former the accused not being a public servant pretended to be a special guard and recovered grazing fee of Re. 1 from a Vanjari in the Parola Range. On being prosecuted he was sentenced to 3 months' rigorous imprisonment. In the latter case a certain person from the Pimpalner Range who having made false allegations against another of setting fire to the forests, was prosecuted and convicted.

The following table shows the casualties and punishments etc. in the three circles :—

Particulars.	Northern Circle.	Central Circle.	Southern Circle.	Total.	
				1936-37.	1935-36.
1. Retirements ..	31	17	21	69	65
2. Deaths ..	6	10	16	32	39
3. Resignations ..	12	3	2	17	20
4. Degradations ..	25	24	2	51	68
5. Convictions ..	..	..	..	..	4
6. Dismissals, removals, etc.	16	16	..	32	44
Total ..	90	70	41	201	240

Except at places notorious for bad climate where ill-health is common among the subordinates, the health of the staff was generally good.

INSPECTION AND TOURS.

His Excellency the Governor of Bombay visited Dandeli and other Kanara forests in May 1936. The Chief Conservator toured in all the Circles.

All the Divisional and other offices were inspected and no serious irregularities were noticed.

CIVIL SUITS.

Northern Circle.—Of the two suits referred to in the last year's report, one that was filed by Mr. N. P. Ponda was dismissed with costs while the other, filed by Mr. G. N. Mohite, is still pending. The second appeal filed by Khan Bahadur Sadwa is also pending.

A suit was filed by Messrs. N. V. Koparkar and A. V. Koparkar for a declaration that they are the owners of the teak trees and their after-growth in survey Nos. 122 and 123 of Patgaon, taluka Murbad, and that Government have no right to obstruct them from cutting and removing the same. The suit is pending.

The Inamdar of Gangaware, taluka Nasik, filed a suit for a declaration that he is entitled to issue private passes for the transport of the forest produce of his Inam village and that it is not necessary for him to use Government passes issued under the Transit Rules. Subsequently he applied for and was granted permission to withdraw the suit on condition that he would not bring in another suit.

Central Circle.—The appeal preferred by Harilal Nanabhai Gujar of Roha in the Tambdi malki case is pending in the High Court.

A suit was filed by the dismissed Ranger Mr. P. D. Billimoria for alleged wrongful dismissal and consequent damage. It is still pending.

Southern Circle.—The two appeals referred to in the last year's report—one filed by Government and the other filed by Mr. A. R. Yellapur are still pending.

LAND REVENUE ADMINISTRATION.

The Divisional Forest Officer, West Nasik, continued to function as Assistant Collector and Excise Superintendent in the Peint Taluka.

The Excise and Revenue Administration of the Akrani Mahal as well as the revenue administration of Pal and a few other villages in the East Khandesh Division were carried on by the Forest Department as usual. The Raisingpur Estate continued to be managed by this Department under the Court of Wards.

The revenue administration of the Dandeli, Kulgi, Virnoli and Kirwatti Forest Mahals in the Southern Circle continued to be in the hands of the Forest Department.

KUMRIES.

The Divisional Forest Officer, Belgaum, inspected many of the Kumri villages in his charge and settled all reasonable complaints of the Kumriwallas to their satisfaction.

VILLAGE PANCHAYATS.

The four panchayats in Kanara Northern Division worked satisfactorily.

Many of the 13 panchayats in Kanara Western Division do not appear to take any interest in the management of the property entrusted to their care. The Collector of Kanara observes as follows in this respect:—

“It is reported that only the Panchayat at Halkar has done some real work. The other panchayats are doing a little, somehow to justify their existence. The panchayats at Vannalli, Holangadde, Walgalli-Kalkeri and Harodi have practically done no work and the Collector intends to dissolve them if they do not show any work during the current year.”

DANGS FOREST ADMINISTRATION.

Though the Surat Dangs were transferred to the control of the Government of India with effect from 1st July 1933, they continued to be administered by the staff of this Department. The conditions governing the loan of the services of the staff to the Government of India and the future relations between the Bombay Forest Department and the Dangs administration still remain to be decided. An appendix is attached to this report containing a short summary of the year's work done in the Dangs.

RELATIONS BETWEEN THE FOREST DEPARTMENT AND OTHER DEPARTMENTS.

These continued to be cordial as ever.

CHAPTER VIII.

GENERAL REMARKS.

The financial results of the year were not as good as those of the previous year. The depression in the timber market in the Northern Circle as evidenced by the large quantities of timber held in stock at some bunder depôts in the North Thana Division, low prices for charcoal in Bombay, the non-disposal of sandalwood at the Dharwar depot before the close of the year and the famine conditions prevailing in some parts of the Presidency during the year, were mostly responsible for a decline in revenue. The high prices ruling in the market for teak timber during 1935-36 were of a speculative character owing to the unsettled international situation. During the year this speculative element disappeared but the market for teak remained firm and on a higher level than that of the year 1934-35. Sandalwood prices, however, continue to be unsatisfactory.

The business with the M. & S. M. Railway was not as satisfactory as in the previous year. This department's tender for logs was not accepted by the Railway which took only 231 tons of sawnwood against 326 tons during 1935-36. The demand for M. G. sleepers was, however, satisfactory and 50,000 Class I sleepers were supplied in addition to the annual supply under the three year contract. A further three years' contract for an annual supply of 60,000 sleepers was entered into with the Railway on terms satisfactory both to Government and to the Railway.

Thana Gurcharans.—The gurcharans in Shahapur, Murbad and Bassein Talukas and Umbergaon Peta were inspected by the Gurcharan Officer, especially in those localities where the demand for tahal is heavy. In some places, however, the pressure on gurcharans for tahal decreased owing to the increased use of rice husk as a substitute for tahal. The general condition of the gurcharans has improved owing to this cause and also to the fact that the villagers have now abandoned the destructive method of cutting branches larger than the stipulated size for use as firewood since they get an abundant supply of fuel from the large number of thinning coupes as well as from their own warkas lands, the injaili trees for which they do not find a ready market owing to the heavy drop in the prices of charcoal.

Due to timely demonstrations, a steady improvement is noticeable in the method of tahal cutting, but continued vigilance on the part of the staff is still necessary.

The Gurcharan Officer attended to the sanitation of a number of villages as a part of the Village Uplift Scheme.

INFOREST CULTIVATION AND INFOREST SETTLEMENTS.

Inforest settlements.—A sum of Rs. 52,431 was realised as land assessment from the settlements in the Northern and Central Circles. A balance of Rs. 2,674 however, remained outstanding against settlers in both the Circles on account of a poor harvest due to want of rain, and recovery of assessment is being suspended in deserving cases. Four new settlements were opened in the North Khandesh Division at Dudhkheda, Ubhand, Aine and Chhavdi. The settlement at Mhasala in Sakri range in West Khandesh was extended by 687 acres. Tagai advances amounting to Rs. 5,000 were given to the settlers in the three Khandesh Divisions.

The general condition of the settlements was satisfactory except in parts affected by scarcity.

Dalhi cultivation.—The total area under Dalhi cultivation in the Kolaba Division at the close of the year stood at 27,777 acres, the assessment realised being Rs. 3,353 and the balance outstanding Rs. 294.

FOREST ADVISORY COMMITTEES.

No meetings were held in the Panch Mahals and Thana Districts. In the Nasik District one meeting was held, the subjects discussed being rotational grazing and ensilage, brought forward by the Deputy Director of Agriculture. Questions raised by a non-official member in regard to the closure of coupes, reduction of grazing fees and issue of permits for thorns were also discussed and the rules on the subject explained.

One meeting was held in the West Khandesh District. No questions of importance were discussed in the meeting. In the North Khandesh Division the rate of fees for cartloads of grass was reduced from 8 annas to 4 annas as recommended by the meeting. One meeting was held in the Kolaba District and at the suggestion made by a non-official member, some literate patils were authorised to issue transit passes for malki material. There was no meeting of the Committee in East Khandesh.

In the Southern Circle two meetings were held, one in Kanara and the other in the Dharwar District. Three proposals put up by the only non-official member who attended the meeting in the Dharwar District could not be considered as they were not raised in time. In all 8 questions were discussed in the Kanara meeting. All questions arising from doubts and misunderstanding were satisfactorily explained by the Divisional Forest Officers who attended the meeting. The Collector's proposal to delete *Kajra* from the list of reserved trees in minor forests of Kanara was negatived by Government.

Wood distillation.—Messrs. B. A. Naik and D. S. Shaligram who originated the proposal to start wood distillation in the forests of the Gujnal Range in the Belgaum Division but failed to give it concrete shape, formed themselves into a Company styled "The Bharat Wood Distillation Factory" with two additional partners and applied for renewal of certain concessions formerly granted to them. Government have regranted the

concessions in the name of this Company. No operations have yet been started but it is hoped that the enterprise will be a success resulting in increased demand for firewood and consequent improvement in the price of fuel coupes.

Alnavar-Dandeli Railway.—The results of the working of this Railway for the year 1936-37 as compared with those of 1935-36 are as under :—

Year.				Receipts.	Expenditure.	Surplus or Deficit.
				Rs.	Rs.	Rs.
1936-37	..	..		26,483	37,937	-11,454
1935-36	..	..	..	38,569	45,629	7,060
Difference	..	..	..	-12,086	-7,692	

In spite of the reduction in expenditure to the extent of Rs. 7,000 the deficit increased by over Rs. 4,000 chiefly on account of the heavy fall in receipts from goods traffic. The more extensive use of carts and motor buses for the transport of timber from the Depot and less export of bamboos due to slump in the trade seriously affected the goods traffic.

As suggested by the Commissioner, Southern Division, in his remarks on the last year's Circle report, the possibility of reducing or eliminating the recurring loss in the working of the railway by increasing the rates for goods traffic was considered. The present rates are already too high and the probabilities are that any further increase would make the matters still worse.

Thana Malki Teak.—The 30 per cent. share amounting to Rs. 41,604 paid to the District Local Board, Thana, up to the end of the year 1936-37 out of the sale proceeds of malki teak in Thana is lying idle with that body. This grant is intended for works of public utility in the Thana District. It is a matter for regret that while there is a clamour for improving the condition of the villagers the Board should be dilatory in drawing up a programme for utilizing this money. The Collector of Thana, at the repeated instance of the Conservator of Forests, Northern Circle, has been pressing the Board in the matter and it is hoped that the Standing Committee of the Board will sanction an agreed programme before long.

Match manufacture.—Only two matchwood coupes, one in North Thana and the other in the Baragaon Dangs, were sold for Rs. 782. Such coupes in the Panch Mahals and East and West Thana Divisions remained unsold.

GRASS STORAGE (UNDER 9-YEAR MONOPOLY CONTRACT).

On the failure of the purchaser to remove all the grass from the Dohad Depot within the period of the second extension granted to him, the

department took over the balance of 52,74,285 lbs. of grass and released the contractor of his liability under the contract. This grass was supplied to agriculturists in the famine affected parts of Dohad and Jhalod, the total quantity of grass so utilised being 26,09,531 lbs. • (including 377,865 lbs. of damaged grass) and the revenue realised Rs. 9,025.

Local grass storage scheme.—The storage now stands at 12½ lakhs lbs. of grass. The grass contractors were called upon by the Revenue Department to supply the stored grass for sale to the agriculturists in the famine affected areas of the Panch Mahals. All the contractors except one complied with the order. The defaulter is being dealt with under the terms of the agreement.

The following measures were taken to meet the situation created by the failure of the monsoon in the East and West Khandesh and Ahmednagar Districts and the eastern part of the Poona District :—

- (1) opening of closed areas and kurans for grazing ;
- (2) extension of the period for paying grazing fees at single rates ;
- (3) remission of grazing fees in Sakri Taluka ;
- (4) relaxation of grazing rules in respect of the definitions of village and non-village cattle ;
- (5) grant of permission to collect *anjan* leaves for fodder ;
- (6) grant of the concession of free grazing for cattle of the Ahmednagar and Sholapur Districts in Poona, Kolaba and Khandesh Districts.

The situation improved somewhat by the late rains in November thus obviating the necessity for starting departmental famine fodder operations.

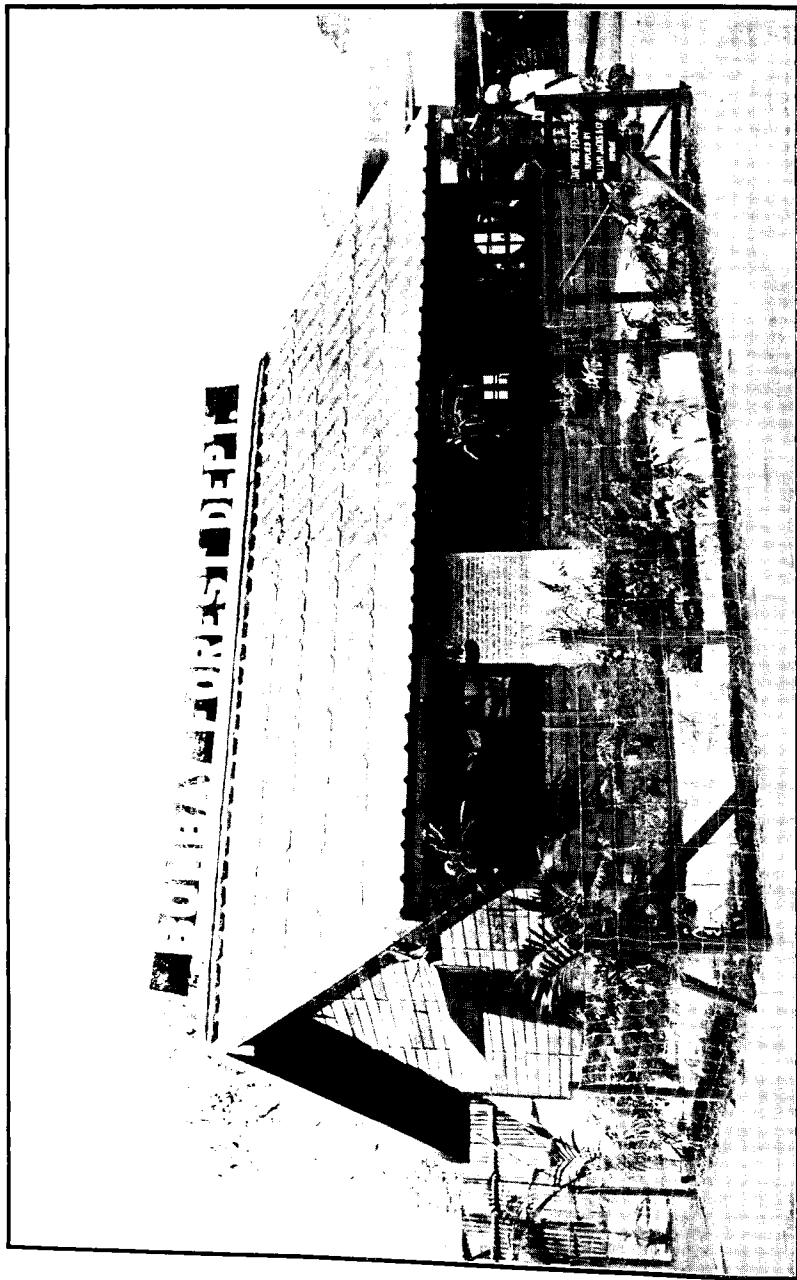
The recovery of arrear grazing fees amounting to Rs. 3,091 from 4 villages in the Sakri Taluka was waived.

Demarcation Survey Numbers.—Government have decided to acquire for forest the Class I survey numbers within the forest demarcation line in the Poona and Satara Districts and the work will be taken in hand as soon as funds are available.

Gun Clubs.—Five new clubs were organised in the Southern Circle. 358 pig were killed by the clubs in the Dharwar District and 22 in the Belgaum District. One of the clubs in the course of 12 expeditions killed 16 pig in the Kanara forests. The period for hunting pig was extended to the end of December.

The Gun Clubs started in East Khandesh made good progress under the guidance of the Shikar Officer and killed 106 pig and 29 blue bull. The Officers of the Pig Killing Campaign, during their visit to the forests of Satara, killed 32 pig.

Hunting and Shooting.—The revenue realised from shooting license fees amounted to Rs. 7,488 as against Rs. 7,517 last year. In addition Rs. 60 were recovered as fine in the Southern Circle.



G. P. Z. P. 1938

Model Forest House exhibited at the Poona Industrial Exhibition, 1930.

Details of animals killed in Government forests are given below :—

All India S.No.	Animal.	Northern Circle.	Central Circle.	Southern Circle.	Total.	Average of 5 years (1931-32 to 1935-36.)
1(a)	Tiger	..	4	15	19	(Five years' figures will not be available till next year).
1(b)	Tigress	..	7	8	15	
2	Panther	22	14	31	67	
3	Wild cat	..	..	1	1	
6	Hyena	..	1	..	1	
8	Wild dog	..	4	..	4	
14	Sloth bear	..	5	7	12	
16	Wild elephant	..	..	10	10	
17	Bison	..	..	21	21	
29	Blue bull	1	35	..	36	
30	Bhakar (4 horned antelope).	1	2	..	3	
32	Chinkara	..	5	..	5	
33	Barking deer	1	2	..	3	
37	Sambhar	..	5	0	14	
38	Cheetal	1	2	15	18	
46	Wild pig	4	165	440	609	
	Total ..	30	241	566	837	

Mr. Piloba Dhondiba Dhumal of Karanjkop in Satara shot 15 pig.

Rewards amounting to Rs. 1,411 were granted by the Revenue Department for killing noxious animals in Kanara and Belgaum Districts as under :—

	Rs.
Wild elephant	1,075
Wild dog	5
Wild pig	331

Total .. 1,411

Forest Exhibition.—An interesting event of the year was the Industrial Exhibition held in Poona in March 1937 in which the Forest Department participated. Of the forest exhibits the most interesting item was a small timber house. This wooden house was designed and constructed by the Forest Engineer, Mr. Alexander, on the lines of a week-end bungalow that could easily be put together and taken apart and used as a portable house. The structure consisted of matti for bed timber, purlins and rafters of teak, walls of teak boards lined with *haddi* and roof of asbestos sheets. Various articles such as sandalwood and ivory carvings, sandalwood billets and furniture made of teak, *shisum* and other jungle-woods as well as other interesting exhibits made of forest produce were kept at the forest stall. The stall was in charge of Mr. E. A. Garland, Divisional Forest Officer, Working Plans, Central Circle, and his staff

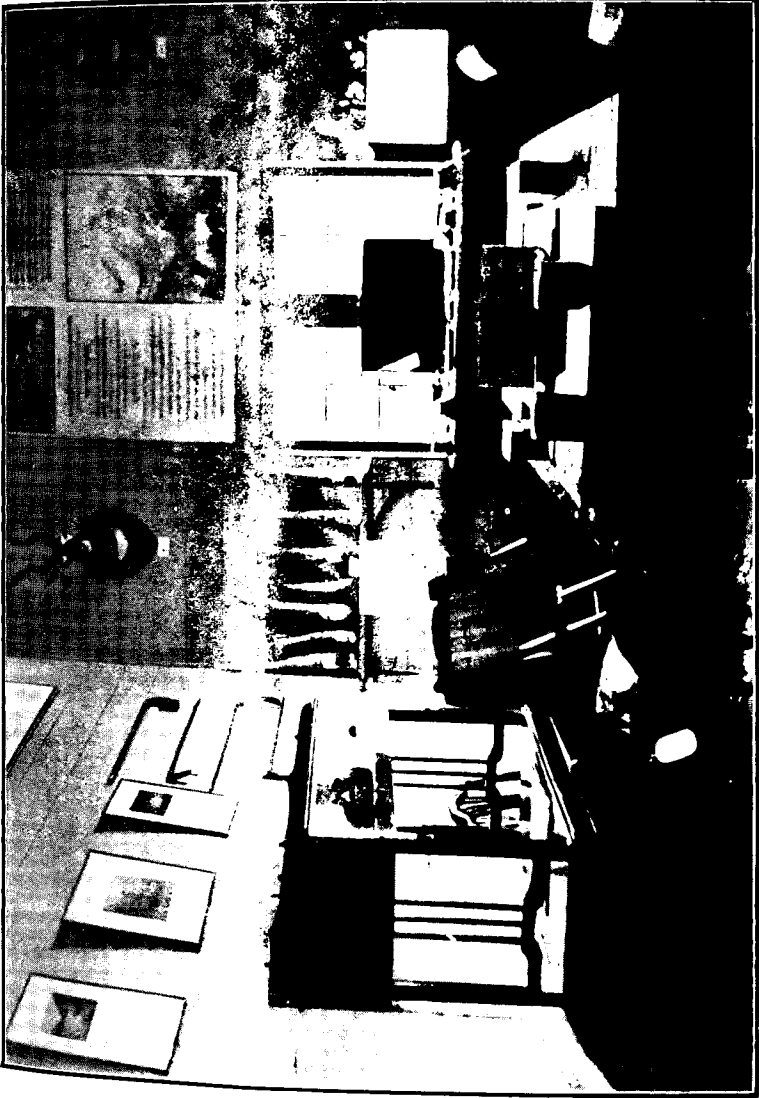
assisted by the Sub-Divisional Forest Officer, Poona, and the Range Forest Officer, Poona. The model timber house and the display in it of interesting exhibits were well appreciated by the public and proved an attractive feature of the exhibition. The articles of furniture as well as certain other exhibits and all the sandalwood were readily sold. The main object of taking part in the exhibition was to advertise various forest products and to gauge the demand for them. The rapid sale of the exhibits and the prices realised for them prove that this object was achieved. The prices realised for the sandalwood justify the view that the department could possibly retail this product in suitable centres with profit.

Conferences.—A conference of the representatives of the principal sandalwood provinces including the Mysore State was held at Bangalore in January 1937 under the Chairmanship of the Inspector General of Forests, to discuss the question of regulating the supply and arriving at some mutual agreement for marketing genuine sandalwood and combating the menace created by the import of the inferior Australian product and East African pseudo sandalwood. Mr. A. C. Hiley represented Bombay. The discussions were none too fruitful, the only outcome being to fix periods for annual sales by the participating provinces, Bombay being allowed the period from 15th February to 15th March. There were 3 other conferences in which the Forest Department participated, viz. (1) Animal Husbandry Wing of the Imperial Council of Agriculture Research in connection with the better utilization of forest grazing held at Madras, (2) Forest Utilization Conference held at Dehra Dun and (3) Cattle Conference held at Simla. To all this Mr. E. A. Garland, Deputy Conservator, was deputed as the Bombay representative.

Village Uplift Scheme.—The following is a brief description of the work done by the Forest Department in connection with this Scheme:—

Northern Circle.—In the course of lectures and demonstrations given by the Rural Uplift Van which toured in the East Nasik Division in March 1937 the local Range Forest Officers explained to the villagers the forest policy of Government and the benefits derived from forests by the people. The Range Forest Officers of several ranges in the Thana District convened meetings of villagers and explained to them the nature and extent of forest privileges, the importance of forests from national, economic and agricultural points of view and the necessity of protecting them.

Central Circle.—The Divisional Forest Officer, East Khandesh, and his rangers gave instructions in forest settlements regarding the value of sanitary arrangements such as the use of communal latrines and storing manure in pits outside villages: they also advocated the planting of trees and improvement of village tracks and roads. The Divisional Forest Officer distributed medicines and held first aid parades throughout the Satpuda settlements and villages as usual. Plots have been given in two cases for the construction of local schools. In North Khandesh the Rangers gave lectures as above. The Bhils and Pawras in the Akrani



Forest Exhibits in the Model Forest House

Mahal were advised to preserve tree growth and not to cut green fuel. In some settlements in the Taloda Range, wells were deepened and attempts made to open schools for Bhil and Pawra boys. In the Kolaba Division, steps were taken to safeguard the interests of the Thakurs and Katkaris against unscrupulous contractors as far as possible. In the Satara Division, the Rangers delivered lectures at meetings in several places on the utility of forests, uses of *nim* and *anjan* trees, usefulness of rotational grazing, value of ensilage, etc. They and the Divisional Forest Officer gave demonstrations on tahal cutting.

Southern Circle.—Villagers were assembled at central places in all Divisions and given instructions about sanitation, clearing of village sites, planting fruit trees and keeping wells, tanks and their surroundings clean. Measures to prevent or combat attacks of malaria were explained. The necessity and importance of forests in relation to the day to day existence of the villagers and the scope of forest privilege rules were impressed upon their minds. The causes leading to and the effects of denudation were pointed out. Attempts were made to bring home to them that forests are a valuable national asset and are being managed by Government on scientific lines through the expert agency of this Department, in the interests of the present and future generations.

Remarks of Divisional Commissioners on Circle Reports are given below :—

Commissioner, Northern Division (Mr. J. H. Garrett, C.S.I., I.C.S.).

The three roads referred to in paragraph 2 (a) of the report are important ones and it is suggested that funds should be provided for them. Outlay on forest roads must undoubtedly be remunerative and is at the same time beneficial to the forest villages.

2. There was an appreciable decrease in the number of offences especially those under injury to forest by fire, unauthorized felling or removal of produce and other offences, and it is satisfactory to note that the Panch Mahals has contributed to the decrease.

3. The suggestion of seasonal withdrawal of gun licences is of doubtful utility. It is, however, advisable that offences committed in forests by licence holders should be more vigorously checked.

4. There was a decrease in the surplus from forests due to decrease in revenue on account of poor quality of the timber and poor coal markets.

5. The Commissioner agrees with the Conservator that it is a matter of regret that while there is a general clamour for grant of funds for improving the condition of villagers, the District Local Board, Thana, should be dilatory in the matter of putting up a programme for utilizing the money already paid to it. The Commissioner trusts that the District Local Board will initiate without loss of time an approved programme of works in consultation with Forest Officers.

6. The Commissioner is glad to learn that the hardworked Forest Officers devoted time to village uplift and educative activities and to propaganda work bringing home to the villagers the benefits of Forest protection.

Commissioner, Central Division (Mr. J. W. Smyth, C.S.I., C.I.E., I.C.S.).

NORTHERN AND CENTRAL CIRCLES.

Rights, Privileges and Free Grants.

During the year free grants of timber were made to poor people in deserving cases for the construction of and repairs to their houses and huts in both Circles. In the Central Circle such grants were also made for the construction of and repairs to temples, chavdis, Mission schools, hospitals, etc., these being works of public utility.

Forest Offences.

Compared with 1935-36 there was an increase of 1,869 in the number of offences in the Central Circle while there was a decrease of 631 in the Northern Circle. The increase in the Central Circle is mainly due to the fact that a larger number of offences are, thanks to the greater vigilance of the Forest Subordinates, now brought to light every year and registered. The increase in the number of offences under the head "Unauthorised fellings" in the Central Circle is attributed to (1) the illicit stripping of Anjan leaves in the Khandesh Divisions, (2) the illicit cutting of fuel by the wild tribes in the neighbourhood of big towns like Jalgaon and (3) the scarcity conditions prevailing in the greater part of the Circle.

Prosecutions.

Out of 320 cases in the Central Circle 139 were decided during the year. Convictions were recorded in 134 cases as against 95 in the previous year. Apart from this 7,533 cases were compounded in the Central Circle and yielded compensation amounting to Rs. 38,338.

Protection from Fire.

The total area burnt in the Central Circle during the fire season ending May 31st, 1937, was 144 square miles as against 356 square miles in the previous year. The decrease is attributed to (1) the burning of more fire lines on both sides of the forest roads in the Satpudas and cart tracks in coupes, (2) the removal of abnormal quantities of grass from the Satpudas owing to scarcity and (3) the enforcement of communal punishments.

Concessions.

Scarcity was declared in parts of the Ahmednagar, Sholapur and Poona districts during the year. There was an acute scarcity of fodder and measures for the relief of cattle were taken by granting concession

rates on the Railway for the import of fodder into these areas from outside. The export of fodder from these areas by rail was also prohibited. In addition various other concessions for grazing as detailed in the accompanying statement were sanctioned in all the districts of the division which contain forests.

General Remarks.

There was a decrease of Rs. 1,24,834 in the gross forest revenue in the Central Circle. It is attributed to (1) the low prices obtained for the coupes in the Khandesh, Poona and Kolaba divisions, (2) the smaller recovery of grazing fees due to scarcity conditions, and (3) some of the coupes in the Poona, Kolaba and West Khandesh divisions remaining unsold.

In commenting upon the increase in the number of forest offences in last year's review I suggested the desirability of greater co-operation on the part of the Forest Department with the villagers themselves and the various Village Improvement Propaganda Sub-Committees. I am glad to note that this suggestion has been taken up and that the co-operation of the Village Improvement Committees is now being more generally sought. Special meetings of villagers including the members of the Village Improvement Committees were convened by Range Forest Officers at several places, and among other matters the necessity of the protection of the forests was explained in detail. Steps are also being taken by the Forest Department to educate the villagers in the matter of conserving the forests by means of the publication of special posters describing the ill effects of forest fires, hacking of trees, etc. Steady propaganda on these lines cannot fail to do good.

Statement showing the grazing concessions sanctioned during the year 1936-37 and referred to in paragraph under "Concessions" of the Commissioner's review.

AHMEDNAGAR DISTRICT.

The collection of grazing fees at single rates was postponed till September 30th, 1936. The cattle in the affected areas were allowed to graze in other parts of the District and also in the adjoining districts without payment of additional fees. A number of coupes in Akola Taluka were thrown open to grazing. The cattle were allowed to graze in the Government waste lands and the pasture lands in charge of the Revenue Department free of charge.

POONA DISTRICT.

The period of recovering the grazing fees at single rates was extended up to December 31st, 1936, in the whole of the Eastern Division and the Deshi part of the Western Division of the District.

The cattle in the affected areas were allowed to graze outside their villages without payment of additional fees.

EAST KHANDESH DISTRICT.

The concession of removing Anjan leaves free of charge up to September 15th, 1936, was granted to the villagers of Chalisgaon Taluka and of Parola Range. The period for the collection of grazing fees at single rates was extended up to September 30th in certain parts of the District.

WEST KHANDESH DISTRICT.

The period for the collection of grazing fees at single rates was extended up to October 31st, 1936, in certain parts of the District. This concession was extended to professional graziers also under certain conditions. The village cattle were allowed to graze outside their villages without payment of extra grazing fees.

Grazing fees were remitted in those villages of the Sakri Taluka in which the total suspension of land revenue was sanctioned. In certain villages of this Taluka cattle were allowed to graze free of charge in Government waste lands and in the pasture lands in charge of the Revenue Department.

NASIK DISTRICT.

The period for the collection of grazing fees at single rates was extended up to November 30th, 1936, in certain parts of the District. This concession was subsequently extended to cattle from non-forest villages, non-village cattle and to cattle belonging to professional graziers.

SATARA DISTRICT.

The period for the collection of grazing fees at single rates was extended up to December 31st, 1936, in certain areas. Grazing fees were also remitted in the Man Mahal and the Khanapur and Koregaon Talukas.

Commissioner, Southern Division (Mr. J. A. Madan, C.I.E., I C.S.)**SOUTHERN CIRCLE.**

The total revenue was Rs. 18,90,160 as against Rs. 20,82,899 in the previous year and the gross expenditure was Rs. 11,17,570 as against Rs. 11,36,731 last year. The surplus thus declined from Rs. 9,16,168 to Rs. 7,72,590. The fall of Rs. 1,73,578 is attributed partly to the non-disposal of the stock of sandalwood worth Rs. 72,000 at Dharwar. The other causes which account for the decrease are the smaller demand for sleepers and other sawn wood from the M. & S. M. Railway, the lower prices realised by sales at Dandeli and Kodibag depôts, the depression in bamboo market, the withholding of coupes from sale in the Dharwar-Bijapur Division, the reduced receipts from the Dandeli Railway and the progressive fall in the price of sandalwood. If these unfavourable conditions are taken into consideration the financial results of the year cannot be said to be unsatisfactory.

2. Forest offences during the year numbered 2,699 as against 3,045 in the previous year. The decrease which occurred under all the heads is shared by all the divisions except Dharwar-Bijapur which shows an increase of 7. This increase is confined to Bijapur District only and is attributed to scarcity conditions prevailing therein. The decrease under fire offences was due to favourable climatic conditions and the co-operation of the villagers. That under unauthorized felling was due to improvement in the economic situation and a better understanding of the privilege rules in the Belgaum and Kanara districts. The decrease under unauthorized grazing was due to the policy of taking cognizance of only deliberate trespass, and of driving out stray cattle from forests. The Commissioner considers that except in cases of deliberate or contumacious trespass this latter method of dealing with cattle is preferable to that of impounding and filing criminal complaints, as it tends to remove much irritation that is likely to arise in such cases.

3. The number of cattle admitted to grazing in forests fell from 4,16,644 to 4,07,107. The fall is attributed to migration of cattle from scarcity areas to the non-forest villages and also to the cattle disease prevailing in the Dharwar District. Owing to the scarcity conditions prevailing in the Bijapur District all closed areas were thrown open for grass cutting and all closed coupes older than 3 years for grazing. The revenue from grazing fees therefore fell from Rs. 83,029 to 80,000 during the year under report. A similar concession will probably be necessary in Bijapur District during the current year also as scarcity conditions still prevail there, unless the conditions are materially changed by the recent rainfall.

4. The Forest Department continued to carry on the revenue administration of the 4 forest mahals of Dandeli, Kulgi, Virnoli and Kirvatti in the Kanara District satisfactorily.

5. The Dharwar Advisory Committee held one meeting during the year. The Kanara Committee also held one meeting and questions

arising from doubt and misunderstanding were satisfactorily explained by the Divisional Forest Officers at the meeting. Government declined to sanction the proposal to delete Kajra from the list of reserved trees in minor forests in Kanara. This proposal was made as a result of the suggestion made at the Advisory Committee meeting.

6. *Alnavar-Dandeli Railway*.—The working of this Railway resulted in a net loss of Rs. 11,454 as against Rs. 7,060 in the previous year in spite of a reduction in the expenditure to the tune of over Rs. 7,000 effected during the year. The loss is attributed to heavy fall in receipts from goods traffic as an extensive use is made of carts and motor trucks for the transport of timber from the depot and also to the decrease in the export of bamboo owing to slump in trade. The Conservator reports that the question of raising the rates for goods traffic was considered in order to reduce the annual loss but as the existing rates were already too high they could not be raised any further without adversely affecting the present rail-borne traffic. It is still a matter for consideration what measures it will be necessary to adopt in order to stop this annual loss from what appears to be an unprofitable concern.

7. The scheme of gun clubs for protection of crops from wild pig is making steady progress. Five more clubs are reported to have been organised during the year. In the Commissioner's opinion they deserve all encouragement that is necessary to make them really useful.

8. It is gratifying to note that the officers of the Forest Department have been interesting themselves in the cause of village improvement. It is hoped that these efforts will be continued so that they may create a better understanding between the public and the Forest Department. The Commissioner is pleased to observe the good results that have been achieved everywhere by this movement, and he hopes that the contact thus brought about between the Forest subordinates and the people in general will tend to remove much of the misunderstanding that now exists as regards the Forest Department.

9. The relations between the Forest Department and the Revenue Department were cordial.

10. Khan Bahadur Ratnagar, who has just retired, managed the Circle with his usual keenness and efficiency.

KOLABA DIVISION.

The total revenue was Rs. 1,54,858 as against Rs. 1,74,818 of the last year and the total expenditure Rs. 1,32,106 as against Rs. 1,26,572 in the previous year. The surplus thus decreased from Rs. 48,246 to Rs. 22,752. The decrease in revenue is attributed to low prices obtained for coupes and some coupes remaining unsold during the year.

2. The total number of forest offences was 1,659 as against 1,629 in the previous year. The rise is wholly due to an increase in the felling offences from 1,085 to 1,145 during the year. All other forms of offences, however, recorded a decrease. The increase in the felling offences is reported to be due partly to unauthorized cutting of trees in the forests

bordering Kharpati by people who have no forest of their own and partly to the greater vigilance shown by the forest subordinates in the detection of crime.

3. The damage caused by erosion to the Casuarina plantations of Akshi and Nagaon on the sea coast during the year was less than that caused last year.

4. The Inam forest of Sardar Bivalkar have been ordered by Government to be restored to him following the decision of the Privy Council in his favour.

5. The Advisory Committee of Kolaba held only one meeting during the year and the suggestion made by a non-official member that the police patils might be authorised to issue transit passes for malki material where no round or dépôt officer was present to give them was accepted. This appears to be a step in the right direction.

6. The relations between the Forest Department and the Revenue Department continued cordial.

7. In the Kolaba Division no appreciable work appears to have been done by the Forest Department in connection with Village Improvement.

APPENDIX.

The following is a short summary of the administration of the Dangs, Surat, for the year 1936-37 :—

The total area of the Dangs is 356 square miles of Reserved Forest and 304 square miles of Protected Forest in charge of the Forest Department. There was no change in the area during the year. The leases of the Dangs forests were terminated by the Government of India from 1st April 1937.

Out of a total of 31 coupes due for working during the year, 28 coupes were sold and exploited by contract agency and the remaining coupes were worked departmentally for the Saw Mill at Sundha.

A sum of Rs. 40,894-3-9 was spent on the construction of new road works under the head Capital Outlay on Forests. In addition, Rs. 8,628-15-9 were spent on maintenance and repairs to 26 miles of metalled and 284 miles of fair weather earth roads. The construction of a 12 span bridge over the river Khapri at Kudkas was satisfactorily completed by the Contractors Messrs. T. C. Verma & Co. of Bombay.

The Bhawandagad-Ahwa Section of the Waghai-Nawapur Road was completed during the year. With the completion of this road and the bridge over the river Khapri at Kudkas we have now an all weather metalled and murrummed road between Waghai and Ahwa the headquarters of the Dangs.

Owing to heavy bamboo and timber traffic in the Dangs the earth roads get very dusty and are badly cut up with deep ruts year after year. It is essential that some of the more important earth roads should be murrummed or metalled at a very early date. A very important road which requires to be metalled is the Waghai-Nasik Section from Chikhaldia to Saputara a distance of about 24 miles. The construction of this road will connect the Dangs with the Nasik Road system.

Rs. 1,463-15-9 were spent on the construction of four Katcha Guards' line at Kalamvihir, Pimpri, Chakdhara and Manmodi under the head Capital Outlay on Forests and a sum of Rs. 1,981-13-9 on general annual repairs to over 79 Forest buildings in the Division.

The construction of Police lines at Waghai was sanctioned and completed during the year at a cost of Rs. 4,476 5-3 under the head F—(Police) 1 (4) Works through the agency of the Forest Department.

Rs. 1,485-11-0 were spent on the construction of new wells at Chikhli, Kalamvihir, Ahwa, Laochali and Pimpri under the head Capital Outlay on Forests. The construction of new wells and dams for holding up water in the Dangs is a matter of very great importance for the welfare of the people and for exploitation purposes. The difficulty lies in locating suitable sites and obtaining a good water supply. During the hot weather many wells run dry and villagers have to go miles for water.

A sum of Rs. 2,842-8-3 was spent on repairs to existing wells and tanks and repairs to compound fences, etc. This includes rental Rs. 1,377

paid to the Telegraph department for the telephone line between Waghai, Ahwa and Sundha paid during the year.

The number of offences detected during the year were 42 as against 17 of the last year and 31 average of the past 3 years. Excepting one case of deliberate incendiarism in Waghai Range in which the accused was caught and prosecuted the other fires were due to carelessness and accidents. The area burnt was 275 acres as against 508 acres last season. On the whole fire protection in the Dangs continued to be a success.

Regeneration by coppice plays an important part in the areas clear felled. This is supplemented by intensive regeneration by sowing and planting both on rab patches and outside rabs. Regeneration by this method was carried out in 20 coupes over an area of 1,012 acres clear felled and the results throughout were very satisfactory. The total number of plants raised in clear felled area during the year was as follows :—

Teak (seedlings and stump plants)	..	269,096
Raiwal chiefly Shissam and Bio	..	58,362

Cultural operations, viz., cleanings in old coupes and weedings in previous years plantation areas were carried out departmentally at a cost of Rs. 2,013-15-6.

The total area worked during the year was 4,434 acres under improvement cum clear fellings and 3,062 acres under selection cum improvement fellings. The total outturn of major produce was 9,98,668 c.ft. of timber and 4,42,164 c.ft. of fuel as against 10,80,960 c.ft. of timber and 4,95,550 c.ft. of fuel of the previous year. The total revenue from minor forest produce was Rs. 1,54,640 as against 1,59,288 of the previous year.

The total receipts during the year were Rs. 5,86,718 as against Rs. 6,51,786 of the previous year and the total expenditure Rs. 2,23,544 as against Rs. 2,17,069 of the previous year. In addition, a sum of Rs. 4,411 was spent under the head Capital Outlay on Forests. The net surplus during the year amounted to Rs. 3,63,174 as against Rs. 4,34,717 of the previous year and Rs. 3,52,642 the average for the previous quinquennium.

The net profit of the departmental operations was Rs. 38,941-13-8 as against Rs. 40,046 of the previous year. The working of the Sundha Mill shows a net profit of Rs. 13,666-14-0 as against Rs. 19,398-13-10 of the previous year.

The charge of the Division was held as under :—

Mr. E. O. Sampson, M.B.E.	..	1st April 1936 to 3rd June 1936.
Mr. E. K. Kotwal	..	4th June 1936 to 3rd October 1936.
Mr. E. O. Sampson, M.B.E.	..	4th October 1936 to 31st March 1937.

The charge of the North Dangs Sub-Division was held by Mr. E. K. Kotwal from 1st April 1936 to 3rd June 1936 and 4th October 1936 to

31st March 1937. Rao Sahab C. K. Amin held charge of the South Dangs Sub-Division for the whole year and also held charge of North Dangs Sub-Division from 4th June 1936 to 3rd October 1936 and 1st February 1937 to 31st March 1937 in addition.

Final orders having been passed by the Government of India transferring the Dangs permanently as Indian States under the control of the Government of India with effect from 1st April 1937, all surplus revenue in the Dangs Suspense Account from 1st July 1933 to 31st March 1937 has been given over to the Government of Bombay as per Government of India orders.

With a few exceptions the work of Rangers and other Subordinate Protective and office establishments continued to be satisfactory.

A. C. HILEY,

Chief Conservator of Forests,
Bombay Presidency.

Poona, 9th October 1937.